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NINTH ANNUAL REPORT

OF THE

STATE

BOARD OF HEALTH

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OHIO STATE BOARD OF HEALTH,

OFFICE OF THE SECRETARY,

COLUMBUS, OHIO, *January*, 1895.

To His Excellency, WM. MCKINLEY, *Governor of Ohio:*

SIR: In accordance with Section 8 of an "Act to create and establish a State Board of Health," the accompanying report is herewith submitted for the year ended October 31, 1894.

Respectfully,

C. O. PROBST, M. D., *Secretary*.

26908

MEMBERS OF THE STATE BOARD OF HEALTH.

	Term expires.
B. STANTON, M. D., *President*, Cincinnati	December, 1895.
S. P. WISE, M. D., *Vice-President*, Millersburg	" 1897.
WM. T. MILLER, M. D., Cleveland	" 1896.
THOS. C. HOOVER, M. D., Columbus	" 1898.
R. D. KAHLE, M. D., Lima	" 1899.
JOSIAH HARTZELL, Canton	" 1900.
E. T. NELSON, M. A., PH. D., Delaware	" 1901.

C. O. PROBST, M. D., *Secretary*, Columbus.

General Report.

The ninth annual report of the State Board of Health, which is for the year ended October 31, 1894, is herewith presented:

PERSONNEL OF THE BOARD.

There has been no change in the membership of the Board since the last report, which remains as follows:

Bryon Stanton, M. D., *President*	Cincinnati.
S. P. Wise, M. D., *Vice-President*	Millersburg.
E. T. Nelson, A. M., Ph. D	Delaware.
Wm. T. Miller, M. D	Cleveland.
Thos. C. Hoover, M. D	Columbus.
R. D. Kahle, M. D	Lima.
Josiah Hartzell	Canton.

Five meetings were held during the year; three in Columbus, one in Cincinnati, and one in Canton. In January a joint meeting of the State and local boards of health was held in Columbus. Over two hundred and fifty delegates were present and the meeting, which was the fourth of its kind, was one of more than usual interest. Quite a number of the township boards sent delegates. The time was almost entirely given up to discussing practical measures for preventing and restricting diphtheria, scarlet fever, typhoid fever and small-pox. The discussion and papers were printed in the *Sanitary Record* and distributed to all boards of health, thus reaching those who were unable to attend.

The results of these meetings are far reaching in their effects. The delegates go back to their respective homes not only better informed, but with increased zeal for their work and a higher appreciation of their duties as guardians of the public health. These meetings also foster that *esprit du corps* without which public service is but half-heartedly performed.

Ohio was among the first to establish these meetings of health officials, and the plan has been adopted in many other states.

HEALTH OF THE STATE.

The year has been one of general good health. This was especially marked as regards the diarrhœal diseases during the hot months. Within the last months of the fiscal year, that is during August, September and October, typhoid fever appeared in many parts of the State, and in some

communities assumed almost epidemic proportions. The disease was very largely confined to the small villages and rural districts where wells furnish the water supply. The unusually prolonged drought had led us to expect such results and warning was given, through the press and otherwise, and the people who were depending on wells were advised to boil all drinking water. Had this been done it is probable that many communities would have escaped the disease.

SMALL-POX.

At no period since the Board's creation has the State been more seriously threatened with small-pox than during the past year. The disease was introduced into eleven localities, viz.: Columbus, Springfield, Toledo, Cleveland, Shelby, Lima, Worthington, Vinton, Lorain, Collinwood and Luckey. In many of these places numerous persons were exposed before the disease was discovered, and but for the prompt action of the State and local health authorities, small-pox would undoubtedly have been widely distributed.

Small-pox manifested during the year a decided tendency to become epidemic, and has not been so prevalent in the United States since the epidemic years 1882–3. The disease became firmly established in the city of Chicago, and still lingers there. During the year 1894 there were 3,062 cases of and 1,029 deaths from small-pox in that city. Lines of connecting railways bring our State into such close relationship with Chicago that an unchecked epidemic of small-pox in that city is a serious menace to Ohio. There are over nine hundred sweat-shops in Chicago where clothing and other textile fabrics are made. Small-pox invaded the sweat-shop district during 1893, and as Ohio purchases a large amount of clothing from Chicago it was feared that the disease would be introduced through this medium. At the instance of the Ohio Board a meeting of State health officials was held in Chicago, May 10, with the view of learning the exact situation as regarded small-pox, and the danger of its importation to other states.

The investigation showed that our fears were well founded; and that clothing was being sent out of the sweat-shops of Chicago and presumably into our State which was liable to convey small-pox. On a subsequent page may be found a report of a conference between the health officials of the various states represented, including the state of Illinois and the city of Chicago, and the wholesale clothiers of Chicago. It was agreed that certain additional precautions with respect to clothing should be taken, under the general supervision of the Illinois board of health. The clothiers offered to pay all necessary expenses.

VACCINATION.

The prevalence of small-pox in the United States and its introduction into our own State led the Board at its October meeting (1893) to adopt a rule requiring all children attending the public schools to show evidence of successful vaccination. Local boards of health and boards of education were called upon to enforce this order.

As was to have been expected, the order met with considerable opposition. It is improbable that many of our people are opposed to vaccination *per se*, but the anti-vaccinationists unite with them many who are opposed to compulsory measures of any kind, and together they succeeded in many communities in preventing the enforcement of the order. On account of interference with school attendance many of the school authorities were opposed to vaccination, or at least until vacation. The country at the time was in the midst of a financial panic, and thousands of workmen were out of employment, and the expenses of vaccination at such a time operated against enforcing the order.

For these and other reasons it was considered wise to suspend the general order for vaccination, leaving it optional with the local authorities to enforce vaccination of school children. It is not necessary here to enter into an argument for vaccination. The world's experience pronounces unqualifiedly in its favor, and without its use small-pox would doubtless again become one of the scourges of mankind in spite of improved sanitary conditions.

At present, in Ohio, the board of health or board of education of any municipality may require children attending public schools to be vaccinated, and such a rule is enforced in many of our cities.

Far greater protection would be given the State if this rule were enforced as regards all pupils, and we respectfully recommend that a law requiring vaccination of school children, and applicable throughout the State, be enacted, and boards of health charged with its enforcement.

CONSUMPTION.

Consumption is now classed among the *preventable* diseases, and the present year has been selected as a favorable time to turn attention to measures for its prevention.

The fact that consumption and other forms of tuberculosis may be communicated from one person to another is not new. During the 18th century the Kingdom of Naples, which then embraced a considerable portion of Italy, enforced the most stringent laws against consumption as a contagious disease, and the effect was seen for many years after the operation of these laws ceased, in the comparative immunity to consump

tion which Naples enjoyed. Subsequently, from the teachings of medical men that consumption is an inherited disease, the people gave up the idea of its contagiousness, and no precautions were taken to prevent its spread. When Prof. Koch in 1882 announced that he had discovered a micro-organism which is the cause of tuberculosis the way was again opened up for the enforcement of preventive measures. But before restrictions can be placed upon persons suffering from consumption, and the patients or their friends be induced to destroy the tuberculous sputum in which the germ of the disease is found, it will be necessary to re-educate the people to the doctrine of the contagiousness of the disease; and this is the work that has been taken up by the Board. First a preliminary circular was sent to each physician in the State, asking his aid and support in the proposed movement against consumption. The result was very gratifying, the replies indicating that there is practically unanimity among the profession in considering consumption a preventable disease, and in a willingness to assist the Board in any way possible. Valuable information was also received in regard to the transmission of the disease from husband to wife and vice versa. This is reported upon in full on following pages.

A pamphlet was then prepared on "The Prevention of Consumption" and 100,000 copies printed. A second circular was sent to each physician with copies of the pamphlet with the request that a copy be left in each family to which he was called on account of consumption. The pamphlet was printed entire in a large number of English and German papers, so that the information it contains has been widely circulated.

Not less than five thousand annually fall victims to this disease in Ohio, selected for the most part from those in the prime of life. Now that the way has been pointed out by which this needless waste of life may be stopped or greatly lessened, it must rest with the people to demand that such restrictions shall be placed around those unfortunate enough to contract the disease as will prevent its dissemination.

It is a well established fact that the meat, and especially the milk of cows suffering from tuberculosis may contain the organism which produces the disease, and it is highly probable that the great prevalence of tubercular affections of the bowels in infants is largely due to the use of such milk. The State should deal with this matter by providing for the inspection of dairy herds. It is possible with great certainty to detect tuberculosis in the living animal by the injection of tuberculin, and an inspection with the use of this agent in suspected cases of tuberculosis should be made of all dairy animals in the State.

WATER SUPPLIES AND SEWERAGE.

By an act of 1893 the State Board of Health was charged with the duty of approving all public water supplies, and all systems of sewerage, with respect to their outlets, introduced subsequent to that time.

This act has met with general public approval, as it insures that public works of this character, which have such close relationship to the public health, shall be under State supervision.

When a city or village proposes to introduce water works or sewerage, or change the source of supply or sewerage outlet of works already in use, application is made to the State Board of Health. A committee of the Board visits the place, looks carefully into all matters likely to affect the health of the people of that or neighboring communities, collects samples of water for examination, when water works are proposed, and the plans are approved or disapproved according to the evidence so obtained.

During the year the Board has been called upon to approve plans for public water supplies in the following places, to-wit: Bowling Green, Lancaster, Lima, Louisville, Gallipolis, Napoleon, Nelsonville and Wooster. These were all approved. Plans for sewerage were submitted for approval by the following places, to-wit: Athens, Ashtabula, Hamilton, Marietta, Nelsonville and Warren. The plans were disapproved for Marietta and Warren. These were subsequently amended in conformity with the requirements of the Board.

MONTHLY SANITARY RECORD.

On account of the reduction in the annual appropriation for the Board it was found necessary to stop the publication of the *Monthly Sanitary Record*. This is to be regretted. The journal was started in January, 1888, and was issued each month to April, 1894.

Its main object was to strengthen the connection between the State and local boards of health and keep alive their interest in sanitary work. In this it has been very successful; and the perfect organization and efficiency of the health service are in no small part due to this publication. The journal reached many besides health officials and was an important factor in disseminating information calculated to improve the public health.

LOCAL BOARDS OF HEALTH.

Our local boards of health have made considerable gain both in numbers and efficiency. There are now 552 municipal and 1,066 township boards of health in the State. This gives a working force of not less than ten thousand men more or less actively engaged in sanitary work.

There remain 136 villages and 287 townships which have failed to establish boards of health. Every effort is being made to complete the organization of local boards, and we trust soon to be able to report that every city, village and township is provided with an organization specially charged with the protection of the public health.

LIBRARY.

This report contains a complete catalogue of the library of the Board. It shows the collection of a considerable number of valuable works and reports on sanitary matters.

In this connection it is desirable to call attention to the inadequacy of the quarters assigned to the Board. A room 25x15, opening on an inner court, so dark that artificial light must be used every day in the year, is "The office of the State Board of Health." One side of this room is entirely occupied by the library case, which is completely filled. Unless some other provision is made, future additions to the library must be consigned to the basement and destruction.

A detailed report of the work of the Board, including reports of special investigations made during the year, follows.

Secretary's Report.

ABSTRACT OF PROCEEDINGS AT MEETINGS OF THE BOARD HELD DURING THE YEAR.

DECEMBER MEETING.

A special meeting of the State Board of Health was held in Columbus December 7, 1893. Present: Drs. Wise, Stanton, Kahle, Hoover, Mr. Hartzell and Professor Nelson. Attorney General Richards and School Commissioner Corson were also present.

The President called the meeting to order at 7:45 P. M., announcing that the meeting had been called to consider the question of postponing the date of required vaccination of school children.

The Secretary presented a report on vaccination, showing the legal and various other obstacles with which local authorities were meeting in attempting to enforce vaccination of school children.

On motion of Dr. Hoover the report of the Secretary was received. The Attorney General advised that local boards of health be requested to adopt as their own a vaccination order similar to the order of the State Board of Health.

Dr. Stanton moved that the time for enforcing the vaccination order be extended to September 1, 1894. Seconded by Dr. Wise. The Attorney General offered as an amendment, that the order should be enforced immediately after the holidays, and that the Secretary be instructed to issue a circular requesting local boards of health to adopt the order.

Dr. Kahle offered an amendment to the amendment, fixing the time at January 8, 1894. The Attorney General accepted the amendment.

The question on the amendment was put and carried.

The question was then put on the original motion, as amended, and was carried.

The State Commissioner of Schools offered to issue a circular letter to boards of education requesting them to co-operate with the boards of health in enforcing vaccination.

On motion of Dr. Hoover the offer was accepted, and a vote of thanks tendered the Commissioner for the proffered service.

The Secretary presented a letter from Mr. Rank, of Canton, superintendent of the Canton Cemetery Association, requesting permission to remove the dead bodies of two children from Canton to Pittsburg, the cause of death of one child having been membranous croup.

On motion of Dr. Stanton it was voted to refuse the request as regards the child who died of membranous croup.

On motion of Professor Nelson the Secretary was instructed to send congratulations to Dr. Murray, of the Marine Hospital Service, on his successful fight against yellow fever at Brunswick, Ga.

No further business presenting, the Board adjourned.

JANUARY MEETING.

A regular meeting of the State Board of Health was held at the office of the Board in Columbus, Ohio, 7:30 P. M., January 24, 1894.

Present: Professor Nelson, President, in the chair, Drs. Kahle, Hoover and Stanton. Mr. Hartzell reported later.

The minutes of the October meeting and of the special meeting held December 7, 1893, were read and approved.

The Secretary presented his quarterly report. On motion of Dr. Hoover the report was received.

QUARTERLY REPORT OF THE SECRETARY.

MR. PRESIDENT: I beg leave to present the following report:

Since the last meeting of the Board I have been called from the office twice.

On December 12, I was called by telegram to Austinburg, Ashtabula county, on account of diphtheria. I have made a special report of my visit, which will be presented later.

January 9, I went to Circleville at the request of the board of health. A special meeting of the board was called in the afternoon, at which all the members were present. I was informed that the board had just been organized, and had requested me to come in order that they might be better informed as to their powers and duties. Heretofore, it was stated, but little effective work had been done, and scarlet fever had been permitted to linger in the city for the past two or three years. The members of the present board expressed the determination to enforce needful regulations if this could possibly be done. The board specially desired to appoint a health officer who would give his whole time to the work. It was feared that council would object to paying an adequate salary. I

advised the board to first unofficially approach members of council and learn if they would concur in the appointment of a health officer at six hundred dollars ($600 00) per year. If objections were found, to appoint the health officer, fix his salary, and if payment were refused, to carry the matter into the courts.

I trust that we may be able, at no distant date, to secure legislation providing for an annual levy for sanitary purposes, placed directly to the credit of the boards of health.

I was able to give the board of health some assistance in arranging for reports and preventive treatment of infectious diseases, for the collection of births and deaths, and other matters connected with the work of a board of health.

Several outbreaks of small-pox have been reported during the quarter.

One case was reported near West Williamsfield, Ashtabula county. The attending physician reported that this case developed one week after vaccination; that there had been no other exposure, and that he attributed the disease to vaccination. The case was reported to the township health authorities as small-pox, and quarantine was established and maintained until the patient recovered.

In writing to the township authorities in regard to the case I assured them that vaccination never gave rise to small-pox, but that as it was possible the patient had in fact been exposed to small-pox prior to vaccination, they should maintain quarantine so long as the case was considered small-pox.

A somewhat similar case, but of more interest on account of the child having been accidentally vaccinated, occurred at Harrod, near Lima. Dr. Kahle was requested to investigate the case and will be able to make a full report of it.

The papers reported two cases in Delaware county. By telegraphing to the township health authorities and to the attending physician I was able to learn that the disease was measles. The report was promptly contradicted.

Three cases have been reported in Columbus.

Since the special meeting of the Board, December 7, small-pox has been reported in other states, as follows:

December 11, thirty-six cases at Reading, Pa., making six hundred and seventy-eight cases to date given, with eighteen deaths. Eleven cases reported in other parts of the same state.

December 23, fifty-six cases in Chicago, making one hundred and seven cases to date given.

December 29, two cases in Durham county, Ontario.

January 4, one case in New Haven, and five in Winchester, Conn.

January 8, five cases in Hamilton, Ontario.

January 9, nineteen cases in Massachusetts, making thirty-four since December 1.

January 11, seven new cases in Reading, Pa., making seven hundred and ten cases to date given, with eighteen deaths. New cases reported in ten other places in the state.

January 22, three cases reported at Lewisburg, W. Va.

Feeling some uneasiness in regard to small-pox in Chicago, and having no late reports from there, I requested Dr. Scott, secretary of the Illinois board, to inform me of the exact situation there. The following reply was received:

SPRINGFIELD, ILL., *January* 17, 1894.

C. O. PROBST, M. D., *Secretary State Board of Health, Columbus, Ohio*:

DEAR DOCTOR: Yours making inquiry regarding the small-pox status in Chicago to date, at hand. I am sorry to say that I am not able to give you reliable information as to the extent of the disease in Chicago since my last report.

I called Monday, while in Chicago, upon the Commissioner of Health, and was informed by him that the disesse had developed more rapidly in the city during the pres nt month than at any other time. He stated that, owing to the over-worked condition of his force in looking after those affected with small pox, he had been unable to furnish a report, but would do so in a few days.

Enough is known to warrant me in asserting that the disease is increasing rapidly in the city, new centers of infection being frequently discovered. The action of the local authorities has been prompt and efficient and everything has been done and is being done to arrest the progress of the disease.

Very truly yours,

(Signed) J. W. SCOTT, *Secretary*.

Recent press dispatches from Chicago report that the authorities have determined to drive out the tramps, unwilling to work, of whom it was estimated there were fifteen hundred. There would appear to be considerable danger of spreading the disease in this manner.

Through the courtesy of the U. S. Consul at Bradford, England, Mr. Claude Meeker, form r Private Secretary of Governor Campbell, I have been able to obtain, in advance of printing, a copy of his report on small-pox in that city. It contains some interesting facts which I will present to the Board if desired.

The correspondence has been unusually heavy during the past quarter; 1,656 written communications were received and 1,581 letters written. In addition 11,500 circular letters were sent out.

There are 685 cities and incorporated villages in Ohio and 549 municipal boards of health, leaving 139 villages unorganized.

A written letter has just been sent to the mayor and council of each of these, urging that a board of health be established at once.

Of the 1,353 township boards provided for by the act of March 14, 1894, 969 have reported as organized. A circular letter to the trustees of these unorganized townships will be sent out soon.

Preparations have been completed for the joint meeting of the State and local boards to be held to-morrow, January 25. Special rates to delegates have been secured on all railroads. The Governor has been invited to be present, and has promised to make a few remarks if possible to come. I have also invited members of Legislature who are physicians.

Respectfully submitted.

C. O. PROBST, *Secretary.*

The committee on straw board works presented a letter from the secretary of the Fish and Game Commission, offering aid in preventing pollution of streams by the waste of such industries. On motion of Dr. Stanton the report was received, and the committee continued.

The Secretary reported the results of examination of the water supply of the Epileptic Hospital. On motion of Dr. Hoover the Secretary was instructed to secure other samples of the water for bacteriological and chemical examination.

A communication was presented from George F. Hammond, architect, of Cleveland, relative to additions to the hospital at the O. S. & S. O Home. The communication was ordered filed.

A communication was presented from Dr. A. W. Smith, of Cleveland, relative to examination of river waters. On motion of Dr. Stanton the Secretary was instructed to thank Dr. Smith for his offer, and to state that work in that direction would depend upon the amount of appropriation received.

A communication was read from Dr. R. D. Murray, of the Marine Hospital Service, stationed at Brunswick, Ga., in answer to a congratulatory letter from the Board. The communication was ordered filed for publication.

The Secretary presented facts concerning the violation of the rules of the Board by the Adams Express Company in shipping dead bodies to Zanesville, Ohio, cause of death having been diphtheria. The Secretary was instructed to call the attention of the proper officials to the violation.

The Secretary presented correspondence relative to the drainage of the court house and jail at McArthur. On motion of Dr. Stanton the Secretary was appointed to investigate the complaint, and report.

Complaints as to the pollution of Plumb creek by the sewerage of Oberlin were read by the Secretary. The Secretary was instructed to go to Oberlin and investigate the complaints.

No further business presenting, the Board adjourned, to meet the following day with the representatives of local boards of health.

APRIL MEETING.

A regular meeting of the State Board of Health was held at the Burnet House in Cincinnati, April 24 and 25, 1894.

All members were present. Professor Nelson in the chair.

The minutes of the last meeting were read and approved.

The Secretary presented his quarterly report, which was approved.

QUARTERLY REPORT OF THE SECRETARY.

MR. PRESIDENT: Your Secretary begs leave to submit the following report for the quarter ending April 24, 1894:

Following the January meeting the proceedings of the conference of State and local boards of health were edited and printed in the *Sanitary Record*. Owing to delay of the stenographer in furnishing a transcript the journal was not issued until the last of February. The cost of printing five thousand copies was $420.00.

According to instructions I visited McArthur on February 22, and investigated the complaint made with reference to the sewerage of the jail and court house. I found there was little or no cause for complaint. A 20-inch sewer had been laid, into which the court house, jail and one hotel drain. The sewer runs with good fall to a small stream which flows constantly, and enters it fully one-fourth of a mile distant from any house. No nuisance had been created, nor is it likely that one will be. A special meeting of the local board of health was called, at which all members were present, and the entire afternoon was spent in discussing various sanitary problems in which the board is interested.

A communication was sent to the manager of the Adams Express Company in regard to the shipment, to Zanesville, of the bodies of persons who had died of diphtheria. He made an investigation and submitted the correspondence to me, but with the request that I return it, which was done. The charges were admitted to be true, but the plea was made that the bodies had been received in states where they were allowed transportation when shipped in an hermetically sealed case or casket. The Ohio rules, they stated, had not been knowingly violated, and they promised strict compliance in the future. Pursuing this matter, I wrote a letter to the general manager of each railroad operated in Ohio, calling special attention to the amendment of the rules of the Board, which prohibits shipment of bodies of those who have died of diphtheria, and requesting copies of their published rules governing transportation of dead bodies. Their attention was also called to the fact that the National Association of General Baggage Agents had recently amended its rules in conformity to this change in the rules of the Ohio Board.

I found that a considerable number of the roads were still working under the old rules, allowing shipment of bodies dead of diphtheria. A number of these promptly amended their rules, and furnished copies of the same. The following railroads have adopted rules similar to those of this Board, as adopted June 30, 1894:

Norfolk and Western; Baltimore and Ohio; Ohio Central; Cleveland, Cincinnati, Chicago and St. Louis; Michigan Central; Cincinnati and Muskingum Valley; Pittsburg, Cincinnati, Chicago and St. Louis; Cincinnati, Hamilton and Dayton; Wabash; Columbus, Hocking Valley and Toledo; Queen and Crescent; Lake Shore and Michigan Southern; Zanesville and Ohio River; Toledo, Ann Arbor and Northern Michigan; Lake Erie and Western; Toledo, St. Louis and Kansas City; Valley Railway; Cincinnati, Jackson and Mackinaw; Cincinnati, Georgetown and Portsmouth; and New York, Chicago and St. Louis.

The Ohio Southern has rules prohibiting transportation of bodies dead of contagious diseases. The Cleveland and Canton, the Cleveland, Canton and Southern, and the Pittsburg, Lake Erie and Western use the former rules allowing the transportation of a diphtheria corpse.

The following railroads transport corpses on physicians' certificate that death was not caused by a contagious disease: Cincinnati, Portsmouth and Virginia; Dayton, Lebanon and Cincinnati; Findlay, Fort Wayne and Western, and the Cleveland and Marietta.

In accordance with instructions, fresh samples of water were secured from the Epileptic Hospital. The following reports of examinations, have been received. In explanation of the different results obtained, as compared with former examinations, I learned that the first samples had been collected without care; the one for chemical examination from the kitchen hydrant without washing out the pipe, and that for biological examination from a leak in the pump.

COLUMBUS, OHIO, *February* 8, 1894.

DR. C. O. PROBST, *Secretary Ohio State Board of Health*:

DEAR SIR: I have completed a chemical analysis of the second sample of water received from the Hospital for Epileptics at Gallipolis, with the following results:

Parts per 100,000.

Oxygen required.	Free ammonia.	Albuminoid ammonia.	Nitrous acid.	Chlorine.	Total solids.
.07	.0005	.005	.001	.52	36.2

The physical appearances of this water were very different from those of the first sample received in December. This sample was very clear and not slightly turbid as was the first sample. The chemical analysis shows a very different water. This sample is of a high degree of organic purity, as is shown by the extremely small quantity of the constituents above named.

Yours truly,

(Signed) CURTIS C. HOWARD.

DR. C. O. PROBST, *Secretary State Board of Health:*

DEAR SIR: The second sample of water from Gallipolis asylum, received on the 10th instant, was perfectly clear and colorless, thus differing materially from the first sample.

Four plate cultures were made, and they showed that the water contained ten (10) bacteria to the cubic centimetre.

This water accordingly is to be pronounced exceptionally pure.

Respectfully,

(Signed) A. M. BLEILE.

Since the last meeting of the Board in January, small-pox has appeared in seven different places in the State. By prompt action there has been little spread at any place. A history of these outbreaks will be given in a special report.

I went to Chicago in February to confer with the secretaries of the Illinois and Indiana State Boards of Health on the small-pox situation in Chicago. A meeting was held at which were present, Dr. Reynolds, Health Commissioner of Chicago, Dr. Ware, ex-commissioner, Dr. John B. Hamilton, of the Marine Hospital Service, and representatives of the Illinois, Indiana and Ohio State Boards of Health.

Dr. Reynolds made a report as to the extent of the epidemic and measures being enforced to control it. From his statements it appeared that proper precautions were not being taken. Domiciliary quarantine was enforced in many cases only by placarding, and a considerable number of cases were being treated in this manner. No provision was made for the isolation of suspects, and persons exposed to small-pox were not quarantined; they were simply vaccinated, and allowed to go.

The situation was freely discussed, and Dr. Reynolds agreed to adopt the principal measures suggested by the conference. I subsequently learned that a house to house inspection was made through the police force—against their wishes—but no cases were found, as the houses were not searched.

A circular letter was mailed on February 5, to all general managers and superintendents of railroads operated in Ohio, calling attention to the prevalence of small-pox in the United States, and urging that railway employes be vaccinated. As a result, most of the railroad employes in Ohio were vaccinated.

On February 28, a circular letter was sent to all local health authorities in Ohio, urging them to co-operate with the police authorities in securing the examination and vaccination of tramps applying for permission to sleep in station houses.

I do not know to what extent the suggestions were carried out. Subsequently the Indiana and Illinois boards took similar action as regards

vaccination of railway employes, and the Indiana board adopted a mandatory order requiring local authorities to vaccinate tramps.

A considerable number of the recent outbreaks of small-pox in the United States has been traceable to tramps, and if this order could be enforced in all the states this danger would be largely removed. At no time since the epidemic of 1881-2-3 have there been so many centers of small-pox infection in the United States. The disease continues unabated in Chicago. For the week ending April 15, one hundred and twenty-six new cases were reported there. The pest house contains one hundred and eighty-six cases, and is overflowing. The Cook county hospital recently admitted ten cases which proved to be small-pox; and over four hundred persons are quarantined there.

April 11 and 12, I attended a meeting of the State and Local Boards of Health of Indiana, held in Indianapolis, and had the honor to make an address on "Some of the Difficulties that Beset a State Board of Health". Dr. J. W. Scott, secretary of the Illinois board, presented an excellent paper on "General Sanitation."

The meeting was well attended—about one hundred and fifty being present—and the papers and discussions were of more than usual interest. Of special interest was a report on the Muncie small-pox epidemic by Dr. Cowen, of Muncie. He made a special plea for hospital quarantine, which was carried out in nearly all the Muncie cases. A number of patients were forcibly removed, and in one instance a board of health employe was shot while doing so. The precedent was established that, in Indiana at least, boards of health may take small-pox patients to a hospital by force of arms if required. These patients were removed from the city on the ground that they constituted a public nuisance.

Some very interesting vaccination statistics were presented, which give a much better showing for vaccination in the Muncie epidemic than was at first reported.

A very interesting report was made by the secretary of the Indianapolis Sanitary Society, which is composed of ladies. The report showed that they are doing a very useful work in sanitary education, and that such a society can very materially strengthen the hands of the local health department. I would suggest that this Board should encourage the formation of similar societies in large cities of Ohio.

Governor Mathews, of Indiana, made a pleasing address, and placed himself on record as a friend of State Boards of Health. A closer alliance was made with Indiana and Illinois with whose sanitary interests Ohio is closely identified.

I remained a day to investigate a press report that a tramp from Chicago, suffering from small-pox, had been driven out of Indianapolis, and had gone to Cincinnati. The report was true, except that the patient had fully recovered, having been dismissed from the Chicago pest house two weeks before coming to Indianapolis.

I have a special report to offer of our inquiry made as regards consumption.

Respectfully submitted.

C. O. PROBST, *Secretary.*

Reports were presented by the committee on sewerage and drainage with reference to—

(*a*) The application of the mayor and council of the city of Warren to discharge sewage into the Mahoning river; and

(*b*) The application of the sewer commissioners of Marietta to discharge sewage into the Muskingum river.

On motion of Dr. Stanton the reports were approved.

Dr. Stanton presented a report of an investigation of scarlet fever at Loveland.

On motion of Dr. Hoover the report was accepted and its sentiments endorsed.

The Secretary offered the following resolution:

WHEREAS, It is highly desirable in the interest of the public health, that health officers shall be properly qualified for the responsible duties of their position; and

WHEREAS, Physicians are usually selected for health officers; therefore, be it

Resolved, By the Ohio State Board of Health, that medical examining and licensing boards of the various States be respectfully urged to provide, where permissible, that medical colleges, to be considered in good standing, shall devote not less than forty hours to the teaching of hygiene and require an examination in that branch of medical education.

On motion of Dr. Hoover the resolution was adopted.

Dr. Hoover spoke of the danger of possible outbreaks of small-pox occurring in so-called commonweal armies passing through the State, and moved that a committee be appointed to present the matter to the Governor, and urge that vaccination of such armies be required before permitting them to come into the State.

The motion was carried, and Dr. Hoover and the Secretary were appointed a committee to wait upon the Governor.

On motion of Professor Nelson the committee was authorized to look after the vaccinal protection of armies already within the State.

The Secretary presented the following circular addressed to railway authorities in regard to railway sanitation:

OHIO STATE BOARD OF HEALTH,
SECRETARY'S OFFICE, COLUMBUS, O., *May* 1, 1894.

To General Managers and Superintendents of Railroads:

DEAR SIRS: With the approach of warm weather the danger of the appearance of such diseases as are known to have their origin in filth is greatly increased. Recent news from abroad indicates also that this country will again be threatened with cholera during the present year. It is known that the unsanitary condition of many railway stations is quite a factor in the production of these disorders.

It is therefore ordered by this Board that you cause to be inspected all depots, buildings, out-houses, feed yards, cattle pens, chutes, etc., with a view of ascertaining and correcting such unsanitary conditions as may be found to exist.

It is requested that such inspection be made, and a report thereof be furnished this Board not later than June 1, 1894, as after that time we intend to have the results reviewed by our own inspectors.

In line with the above, we beg to offer the following suggestions:

Stations should be looked after as regards cleanliness, disposal of excreta and water supply.

Waiting-rooms and their surrounding yards should be thoroughly cleaned. Horse manure, and animal and vegetable refuse of all kinds should be removed. Low places about stations collecting stagnant water should be filled or drained.

Care should be taken to obtain water for stations from a pure source. Suspicion should attach to water from a well within 100 feet of an uncemented privy vault. Drinking vessels should be washed at least once daily.

Full or foul privy vaults should have their contents removed and the vault disinfected. A privy vault should never be permitted to be filled up and abandoned without first having its contents removed.

Where water closets are in use, care should be taken to insure that all fixtures are properly trapped, and that the traps are in working order. Closets should be made clean, and it would be well to treat them with liberal amounts of a disinfectant solution.

In the sanitation of trains we would emphasize the importance of giving attention to the following points:

Great care should be taken to insure purity of water furnished passengers for drinking; and not only should its source be closely scrutinized, but the after care of it should be kept in mind. In this connection we desire to call your attention to the disgusting and also dangerous method in vogue for supplying water tanks with ice. Where these tanks are charged from the top, the ice, after it is broken to suitable size, is handled at least twice by men with dirty begrimed and possibly infected hands; where the ice is brought into the cars, by the dirty hands of at least one workman. This practice should be broken up, not only for the sake of cleanliness, but because there is real danger of infecting the water supply of trains.

Water tanks should be thoroughly cleaned at frequent intervals, and it would be advisable when doing so to have them scalded inside.

Passenger cars should be kept in the cleanest possible condition. The frequent practice of sweeping and dusting cars enroute when occupied is most reprehensible; it is most disagreeable to passengers, and should be stopped, as the dust so raised may oftentimes be infected. Instead, they should be cleaned by damp mops and cloths.

Each car should be provided with a reliable thermometer, and conductors should be instructed to keep their cars heated in winter or cool weather, not above 70° nor below 60° F. Conductors should also be required to pay special attention to the ventilation of their cars. Urinals and water closets should be thoroughly cleaned, and flushed with a disinfectant solution at the end of each trip. The floors of water closets should be mopped with a disinfectant solution.

By carrying out these and other measures of cleanliness that may suggest themselves, railroad companies can do much towards securing the health and comfort of the traveling public; and from the interest you have heretofore exhibited in sanitary reforms, we confidently expect your cordial co-operation in this effort to protect the public health.

As the public is rightfully interested in knowing what is done by your company along the lines suggested herein, we beg you to favor us with a detailed report of the work done by June 1, in order that we may embody it in a report we will make on this subject.

Additional copies of this circular may be obtained if desired.

Respectfully,

C. O. PROBST, M. D., *Secretary.*

On motion of Dr. Wise the Secretary was instructed to have the circular printed and sent to all railway authorities operated in Ohio.

The Secretary reported that the United States Postal authorities had ruled out the "*Monthly Sanitary Record*" as second class matter, and that this would increase the postage on the journal $600.00 or more per annum.

On motion of Professor Nelson it was voted that no action be taken on the matter until the next meeting, and that an attempt be made to have the journal reinstated.

Dr. Hoover introduced the following resolution and moved its adoption:

Resolved, That the State Board of Health, through the investigation of the cases of scarlatina occurring in Loveland, Ohio, on the 13th day of April, are of the opinion that the local board of health of said village did grossly neglect the requirements of this Board in the management of contagious diseases and that the great fatality in said outbreak was doubtless due to said gross neglect; and

Resolved, That the action of said local health board is strongly condemned.

Dr. Stanton moved to amend by striking out the clause "and that the great fatality in said outbreak was doubtless due to said gross neglect."

The amendment was adopted.

On motion of Dr. Stanton the resolution, as amended, was adopted.

Adjourned to 9 A. M., 25th of April.

SECOND SESSION, APRIL 25—9 A. M.

Present as before.

The Secretary presented a report on the vaccination of one hundred and twenty-three students of Starling Medical College, as performed by Dr. Hoover and himself.

On motion of Dr. Hoover the Secretary was instructed to increase the supply of vaccine virus kept on hand.

An application was presented from the authorities of Nelsonville for approval of the source of public water supply and outlet of their sewerage system about to be introduced.

On motion of Dr. Hoover it was voted to hold the June meeting in Canton.

The Secretary presented a report of an inquiry *in re* consumption in Ohio, embracing a resume of cases due to contagion, as reported by physicians; and also a circular on the Prevention of Consumption, intended for general distribution.

Dr. Kahle moved that the report be received, and the circular adopted and printed for distribution. Carried.

On motion of Dr. Kahle it was voted to prepare an additional circular containing matter selected from the Secretary's report showing the contagiousness of the disease.

On motion of Dr. Kahle the Secretary was instructed to make an inquiry as to the prevalence of consumption in public institutions, and precautions taken to prevent contagion.

Mr. Hartzell moved that the circular on Prevention of Consumption be placed in proper shape for distribution in the public schools. Carried.

No further business presenting, the Board adjourned.

JUNE MEETING.

A regular meeting of the State Board of Health was held at the Hurford House, Canton, Ohio, June 13 and 14, 1894.

Present: Professor Nelson, in the chair, Mr. Hartzell and Drs. Hoover, Stanton and Kahle.

A telegram from Dr. Miller, of Cleveland, was read, stating that he was unable to attend.

On motion of Dr. Hoover it was voted to dispense with the reading of the minutes of the last meeting.

The Secretary presented his quarterly report, which on motion of Dr. Hoover was received.

QUARTERLY REPORT OF THE SECRETARY.

MR. PRESIDENT: I beg leave to submit the following report:

One hundred thousand copies of a circular on the Prevention of Consumption, adopted at the April meeting, were printed, and most of them have been distributed. Copies were sent to all physicians in Ohio, to superintendents of schools, to the press, and to municipal and township boards of health.

The circular met with a very gratifying reception. It was published entire in a number of newspapers, and also received favorable editorial comment in many instances. As the result of press notices hundreds of requests for the circular, many of them from residents of other States, have been received.

The following letter relative to the circular has just been received from Dr. Lee, of the Pennsylvania board, with copies of resolutions in regard to tuberculosis, adopted by that board, which I will also read:

PHILADELPHIA, *June* 6, 1894.

DR. C. O. PROBST, *Secretary State Board of Health, Columbus, Ohio:*

DEAR DOCTOR: Accept my thanks for your various valuable circulars on the subject of Tuberculosis. There can be no question that they will result in great good, and we may ask the privilege of adopting certain of their suggestions for our own state. I send you resolutions adopted by our Board at its last meeting, referring to the same subject.

Yours very truly,

(Signed) BENJ. LEE, *Secretary.*

Resolved, That this Board considers the evidence in favor of the doctrine of the communicability of tuberculous diseases, and especially of that form known as consumption of the lungs, to be of so convincing a character as to demand recognition by sanitary authorities; and therefore,

Resolved, That tuberculosis (including consumption of the lungs) be added to the list of communicable diseases dangerous to the public health, in the Regulations of this Board; and further,

Resolved, That this Board strongly recommends to all local boards of health, that they require returns of tuberculosis, when it has reached the infective stage, from all physicians and householders, in the same manner that returns of other infectious diseases are now required.

A circular letter was sent to the superintendents of State institutions, county infirmaries, and children's homes, asking for the following information: The number of deaths from consumption during the past five years, number during 1893, number of cases on hand, and precautions to prevent contagion.

Answers have not been received from any of the State institutions. Fifty infirmaries reported fifty-four deaths from consumption during 1893. Very few could give the number for the past five years, as no record is

kept. No special precautions are taken in any of them to prevent spread by contagion.

I received an invitation to address the Infirmary Directors' Association, which met in Akron June 7, and presented a paper on "The Prevention of Consumption in Infirmaries." Mr. Hartzell, who was in Akron on that day, attended the meeting with me, and also, by request, addressed the meeting. I had also the honor to present a paper before the Ohio State Medical Society at its annual meeting held in Zanesville, on May 16, on "The Prevention of Tuberculosis."

The circular relative to railway sanitation has been sent out, and some of the roads have furnished reports showing that the Board's suggestions are being enforced.

The resolution adopted by the Board relative to more effective teaching of hygiene in medical colleges, was printed and a copy sent to each medical examining and licensing board, and to each State board of health in the United States. It was also sent to all the sanitary journals in the United States, and was printed in the columns of several with favorable comment. A number of letters, commending the Board's action, were received from the secretaries of examining boards and State boards of health.

The following letter was received from the health officer of Rendville:

May 3, 1894.

DR. C. O. PROBST, *Secretary:*

DEAR DOCTOR: The contents of this jar, which is a sediment of coffee from which six of Mr. Joseph Limity's family were severely poisoned Tuesday morning May 2.

I am requested by the mayor of Rendville to send this jar with contents to you, and request that you have the State chemist make an analysis, and report to my address.

Below are the symptoms that the patients, who used the coffee, had, viz.: Fever, burning pain in the epigastrium, stomach swollen, violent vomiting, tenesums, burning pains at the arms, muscular cramps in the legs, severe headache, intense thirst, dry, hot skin, small rapid pulse, anxious, pinched countenance, eyes suffused and smarting, tongue dry and furred, nervous twitching, with a perfectly clear mind.

(Signed) J. S. SESSOMS, M. D.

P. S. Please let me hear from you at an early date.

I wrote for further particulars, and received a second letter, as follows:

May 7, 1894.

DEAR DOCTOR: Replying to your request, was called to see Joseph Limity's (Cora Lamida) family, May 2, where I found six persons of the family dangerously sick. I learned from the nurse that they were all sick while at breakfast. All who drank the coffee were taken instantly sick, and those who did not drink any coffee, but partook of the other food, escaped being sick while, none who drank the coffee escaped being sick. I then took some of the coffee and gave it to the house dog, and in a short time it had all the symptoms of a very sick little animal, while the eggs, meat and bread did not have any ill effects on it whatever.

This coffee was bought of David Wells, and manufactured by the Lion Coffee Company.

Yours truly,

(Signed) J. S. SESSOMS, M. D.

I then submitted the coffee grounds to Professor Howard for analysis, who reported as follows:

COLUMBUS, O., *May* 16, 1894.

DR. C. O. PROBST, *Secretary Ohio State Board of Health:*

DEAR SIR: I have examined the coffee grounds contained in fruit jar and received from you, with the following results: The examination was directed to the discovery of alkaloidal and metallic poisons. Alkaloids were found to be absent. Compounds of the following metals were found to be absent: Mercury, copper, bismuth, lead, antimony and tin. Arsenic as arsenious oxide was present.

Weight of coffee grounds, liquid and jar	737 gm.
Weight of jar	405 gm.
Weight of coffee grounds and liquid	332 gm.
Taken for analysis	65 gm.
Arsenic sulphide obtained, calculated as arsenic oxide	.4174 gm.
Present in entire contents, by calculation	2.1319 gm.
Weight in grains	32.9 grains.
Arsenic oxide in solid state at bottom of jar, .1755 gm =	2.7 grains.
Total arsenic oxide present	35.6 grains.

Respectfully submitted.

(Signed) CURTIS C. HOWARD.

Copies of the correspondence and of the chemical analysis were sent to the prosecuting attorney of Perry county with the request that the matter be investigated.

As special matters I have to present a report on the sanitary condition of Uhrichsville, and of the investigation of an alleged nuisance at Woodsfield, Monroe county.

Respectfully submitted.

C. O. PROBST, *Secretary.*

Drs. Hoover and Probst, committee, presented a report of an inspection of the National Vaccine Establishment at Washington, D. C. On motion of Dr. Kahle the report was received.

Dr. Stanton moved that publication of the *Monthly Sanitary Record* be temporarily discontinued, and that the Secretary be instructed to notify all subscribers and others to whom the journal has been sent, that publication was suspended on account of a reduction in the appropriation granted the Board. Carried.

Dr. Stanton moved to reconsider the question. Carried. Dr. Hoover moved to amend as follows:

That a committee be appointed to confer with the Emergency Board and request authority to create a deficiency for an amount sufficient to continue the publication of the *Monthly Sanitary Record*, and that on failure to secure a permit to create a deficiency, publication be suspended.

Dr. Stanton accepted the amendment.

The motion as amended was then carried.

The committee on sewerage and water supplies reported on the outlet of the sewerage system proposed for the village of Nelsonville.

On motion of Dr. Kahle the report was received, and the recommendations of the committee approved.

The same committee submitted a report on the proposed water supply for Nelsonville. On motion of Dr. Stanton the report was received and the recommendations of the committee approved.

On motion of Dr. Stanton it was voted to appoint a committee to report at the next meeting on a uniform plan of procedure in all cases where the Board is called upon to approve sources of proposed public water supplies or outlets of sewerage systems.

On motion of Dr. Kahle the Secretary was instructed to consult the Attorney General in regard to the legality of bonds issued to build water works or sewerage systems which have not been approved by the State Board of Health, as required by Section 2 of an act of March 14, 1893, as amending the act to create a State Board of Health. Also to secure the advice of the Attorney General as to the steps to be taken by the Board in regard to cities and villages that have established water works or sewerage systems in violation of the provisions of said act.

Professor Nelson moved to proceed with the election of officers. Carried.

Professor Nelson nominated Dr. Byron Stanton for President for the ensuing year, and moved that the Secretary be instructed to cast the ballot of the Board for Dr. Stanton. Carried. The Secretary reported having performed this duty, and Dr. Stanton was declared unanimously elected.

Dr. Kahle nominated Dr. Wise for Vice-President. Dr. Hoover moved to instruct the Secretary to cast a ballot for Dr. Wise. The Secretary reporting this duty done, Dr. Wise was declared elected.

Dr. Kahle moved that when members were unable to attend Board meetings, they be instructed to telegraph the Secretary. Carried.

Dr. Kahle moved that the Secretary and two members, to be appointed by the President, be delegated to represent the Board at the meeting of the American Public Health Association in Montreal, in September. Carried.

Adjourned to meet at 8:30 A. M. the following day, to inspect the sewage disposal plant, water works and hospital at Canton.

OCTOBER MEETING.

A regular meeting of the State Board of Health was held in Columbus at the office of the Secretary, October 24 and 25, 1894. All members were present. Professor Nelson occupied the chair.

The minutes of the last meeting were read and approved.

Professor Nelson then resigned the chair to Dr. Stanton, who was elected President at the June meeting.

The Secretary presented his quarterly report, which was approved.

QUARTERLY REPORT OF THE SECRETARY.

MR. PRESIDENT:

I have the honor to submit the following report of operations since the meeting of the Board in June.

The matter of creating a deficiency in order to continue the publication of the *Monthly Sanitary Record*, was laid before the Emergency Board, but the request was denied.

When the change in postal laws was amended, admitting bulletins of State boards of health as second class mail matter, I wrote to each member of the Board in regard to issuing a monthly bulletin. All of the members favored it. The firm which printed the *Record* has offered to print three thousand (3,000) copies of a monthly, eight-page bulletin without cover, but with an extra sheet for mortality tables, for $52.00 per month. Without the extra sheet for mortality tables, $20.00 per month.

I prepared the matter for an October bulletin, but, by advice of Dr. Hoover, have held it so that the question of issuing a bulletin could be considered at this meeting.

The following are titles of special reports to be submitted at the pleasure of the Board:

1. Sewage Disposal at Oberlin.
2. Sewerage for Athens.
3. Sewerage for Marysville.
4. Water Supply of Bowling Green.
5. " Lancaster.
6. Nuisance at Alliance.
7. " Bellefontaine.
8. " Vinton.
9. Diphtheria at Lorain County Infirmary.
10. " Perrysville.
11. Typhoid Fever at Bradner.
12. " Pt. Pleasant.
13. " Mansfield.
14. " Medina County Infirmary.

Dr. Hoover of the finance committee submitted a report of receipts and disbursements to date.

Dr. Stanton submitted a report of an investigation of an alleged nuisance at Arlington Heights. On motion of Dr. Hoover the report was received.

Dr. Kahle and Professor Nelson, special committee, presented a report on the proposed additional water supply of Lima. On motion of Dr. Miller the report was approved.

Mr. Hartzell, Professor Nelson and the Secretary, a special committee, presented a report on the proposed outlet for sewer district No. 2 of Ashtabula. On motion of Dr. Miller the report was approved.

Professor Nelson presented a report on the proposed water supply of Napoleon. On motion of Dr. Miller the report was approved.

Dr. Hoover offered the following resolution and moved its adoption:

Resolved, That the suspension of the publication of the monthly bulletin be continued indefinitely, on account of the lack of funds.

A yea and nay vote being called for, resulted in four votes in the affirmative and three in the negative; so the resolution was declared adopted.

Adjourned to 9 A. M. the following day.

OCTOBER 25, 1894.

The Board convened at 9 A. M., all members being present.

Communications were presented from Wooster, requesting approval of a proposed water supply for that city.

On motion of Professor Nelson the matter was referred to the President for action.

The President announced the following committees for the year 1894–5:

Hygiene of Public Institutions.

B. STANTON, Chairman, T. C. HOOVER, The Secretary.

Epidemic and Epidemic Diseases and Quarantine.

S. P. WISE, Chairman, W. T. MILLER, The Secretary.

Hygiene of Railways and Occupations.

T. C. HOOVER, Chairman, JOSIAH HARTZELL, R. D. KAHLE.

Hygiene of Schools.

E. T. NELSON, Chairman, W. T. MILLER, R. D. KAHLE.

Adulteration of Foods, Drinks and Drugs.

W. T. MILLER, Chairman, R. D. KAHLE, E. T. NELSON.

Vital Statistics.

S. P. WISE, Chairman, B. STANTON.

Especial Sources of Danger to Life and Health.

R. D. KAHLE, Chairman, S. P. WISE, JOSIAH HARTZELL.

Water Sources, Sewerage and Drainage.

E. T. NELSON, Chairman, Josiah HARTZELL, The Secretary.

Diseases of Animals.

JOSIAH HARTZELL, Chairman, S. P. WISE, T. C. HOOVER.

Finance.

T. C. HOOVER, Chairman, W. T. MILLER, E. T. NELSON.

Professor Nelson moved that the President and Secretary be required to take into consideration the advisability of sending to each member of the Board a brief monthly report of the work being done. Carried.

A communication was presented from Mr. T. J. Mulvihill, an undertaker of Cincinnati, requesting permission to remove the remains of thirteen persons buried in St. Joseph's Cemetery, near Cincinnati, to Reading, Hamilton county, Ohio. One of these persons died of small-pox; the cause of death of the others was unknown.

On motion of Dr. Miller the request was refused.

The Secretary reported that he had been informed that the Ashland County Infirmary was in a bad sanitary condition. On motion of Dr. Miller the matter was referred to the committee on hygiene of public institutions.

The Secretary submitted a proposition in favor of publishing a quarterly sanitary bulletin, provided the proceedings of the annual meetings with local boards of health could be included therein.

Dr. Miller moved a reconsideration of the vote on the resolution offered by Dr. Hoover. Carried.

Dr. Miller moved to amend the resolution so as to provide for the publication of a quarterly bulletin.

Mr. Hartzell moved as an amendment to the amendment, that the publication of a quarterly bulletin be referred to a special committee with power to act, consisting of Dr. Hoover and the Secretary.

The resolution, as amended, was adopted.

Professor Nelson offered the following resolution, which was unanimously adopted:

Resolved, That the thanks of this Board are due, and are hereby tendered, Hon. Joseph E. Washington, Member of Congress from Tennessee, for his successful efforts in securing low postage rates for publications of State Boards of Health.

On motion of Dr. Kahle it was voted to hold a joint meeting of the State and local boards of health, the program to be prepared by the President and Secretary.

Mr. L. E. Chapin, C. E , of Canton, Ohio, appeared before the Board and presented plans showing proposed sewerage system of Marietta and of Alliance, and proposed water supply of Louisville.

On motion of Dr. Hoover, duly seconded, it was voted to approve the plans for sewerage of the city of Marietta, as submitted by Mr. L. E. Chapin, consulting engineer, subject to the following change: *i. e.*, that the outlet sewer for sewer district No. 1 should be merged into the outlet sewer for sewer district No. 2, said outlet being located at the foot of Post street The Secretary was instructed to certify upon the plans their approval by the Board.

Mr. Hartzell moved to approve the plans for a water supply for Louisville.

Dr. Hoover moved to amend by adding "If deemed advisable after a personal examination by the Board."

The motion, as amended, was approved.

On motion of Dr. Hoover the standing committee on water sources, sewerage and drainage was instructed to prepare forms and specifications to be used in submitting proposed water supplies and outlets of sewerage systems to the Board for approval.

On motion of Dr. Hoover it was voted to request the council of the city of Alliance to have complete plans prepared and submitted to the Board for approval, showing proposed methods for disposing of its sewerage, and for its purification before turning it into the Mahoning river.

Mr. Chapin presented the matter of the alleged pollution of the Hocking river by sewerage from the Athens Asylum for Insane. No action was taken.

The Secretary presented matters to be included in the annual report for 1894. The report was approved.

A number of communications, with reference to which action had already been taken by the Secretary, were presented.

No further business presenting, the Board adjourned.

SPECIAL REPORTS.

CONTAGIOUS DISEASES.

1. Report on Diphtheria at Austinburg.
2. Report on Diphtheria at Lorain County Infirmary.
3. Report on Diphtheria near Perrysville.
4. Report on Typhoid Fever at Bradner.
5. Report on Typhoid Fever at Point Pleasant.
6. Report on Typhoid Fever at Mansfield.
7. Report on Typhoid Fever at Medina County Infirmary.

SEWERAGE.

1. Report on Sewerage for Athens.
2. Report on Sewerage for Ashtabula.
3. Report on Sewerage for Hamilton.
4. Report on Sewerage for Marietta.
5. Report on Sewerage for Marysville.
6. Report on Sewage Disposal at Oberlin.
7. Report on Sewerage for Warren.

WATER SUPPLIES.

1. Report on Water Supply for Bowling Green.
2. Report on Water Supply for Lancaster.
3. Report on Water Supply for Lima.
4. Report on Water Supply for Napoleon.
5. Report on Water Supply for Wooster.

NUISANCES.

1. Report on Nuisance at Alliance.
2. Report on Nuisance at Arlington Heights.
3. Report on Nuisance at Bellefontaine.
4. Report on Nuisance at Vinton.
5. Report on Nuisance at Woodsfield.

MISCELLANEOUS.

1. Report on Consumption.
2. Report on Small-pox and Vaccination.
3. Report of Inspection of National Vaccine Establishment at Washington, D. C.
4. Report of Inspection of Woman's National Relief Corps Home.

5. Report on Sanitary Condition of East Palestine.
6. Report on Sanitary Condition of Uhrichsville.
7. Report on Sanitary Condition of School House at Bryan.
8. Report of Delegate to Montreal Meeting of the American Public Health Association.

REPORT ON DIPHTHERIA AT AUSTINBURG

BY THE SECRETARY.

On December 12 I was called by telegram to Austinburg, Ashtabula county, on account of diphtheria.

November 29 a young girl in the family of C. A. Alvord was taken sick with diphtheria, and two other children in the same family subsequently developed the disease.

The following day, Thursday, two children in the family of Dr Ellsworth, aged five and seven, were taken sick with the disease; one died on the following Sunday evening. On the next day, Monday, his wife was taken down with the disease. She had a severe attack but recovered. A third child in the family, aged two years, was removed on the day the elder children were taken sick, to a family in the village where there were no children. This child was also taken sick with diphtheria a few days later, and was buried on the day of my visit.

Thursday, November 30, a young lady in another family was taken sick and died on the following Sunday. On December 6 her mother developed diphtheria but recovered. December 3 a child of six years, in another family, took the disease but recovered.

Bearing on the origin of the disease, the following facts were learned:

Some two weeks prior to the outbreak in the village, Dr Ellsworth was called to see a diphtheria patient in the country. Being fearful of carrying the disease to his children, he sent his wife and children to her parent's home ten miles away. On dismissing his diphtheria case, the doctor claims that he thoroughly disinfected his clothing and then put on a new suit of clothing, leaving the old one in the garret. Ten days later he sent for his family, and within two or three days after their arrival the older children were stricken with diphtheria. It is not known that these children were exposed to the cast off suit of clothing.

The first case, the young girl taken sick November 29, regularly got milk from Dr. Ellsworth. During the time Dr. Ellsworth attended the diphtheria case in the country he milked his cow and cared for the milk and

two or three of the families in which diphtheria occurred, used this milk—but as these cases did not occur until two weeks after the doctor had discharged his diphtheria case, I do not think it probable that he directly infected the milk.

The diphtheritic virus was undoubtedly carried to his house, and it is possible that they gained lodgment there and subsequently infected the milk, which was kept in the house. I doubt the fact of this having been the medium of communication, though this theory was held by many of the residents.

The trustees of the township (the village is not incorporated), had organized a board of health previous to the outbreak, and had elected Mr. H. G. Shipman health officer. The school in the village had been closed, but on the outskirts is located the Grand River Institute, and the managers had determined to open school on the 12th of December. The township board of health, not knowing how to deal with the matter, telegraphed for me to come. A consultation was held with the township board and managers of the Institute. There are usually one hundred and fifty to two hundred students attending the Institute, the majority of them being from the surrounding country. About forty had already arrived.

I found that the case of diphtheria had not been strictly quarantined as regards adults of families in which there were cases of the disease, and that one of the Institute pupils had been indirectly exposed to diphtheria the day I was there. It was agreed that the Institute should remain closed for one week, and longer if there was further extension of the disease; and that students already there should be prohibited from going into the village until diphtheria disappeared.

I have just received the following letter from Dr. Ellsworth giving additional information concerning the outbreak:

AUSTINBURG, OHIO, *January* 22, 1894.

DR. C. O. PROBST, *Columbus, Ohio*:

DEAR DOCTOR: Upon inquiry to-day I find that C. A. Alvord's daughter was taken sick on November 28, instead of 29. My two older boys were taken sick on the 30th, the youngest on December 6.

I am safe in saying that the Alvord children had none of them been to my house after milk for thirty days prior to date of sickness. She had, in company with many other children, been to my office to get vaccinated, perhaps ten or fifteen days before sickness.

As to milk, Alvord's wife told me that their youngest children drank very much more than she did and they were not taken sick for four or five days after she was.

The same was true at our house. The youngest boy drank much more milk than the others and was taken sick last.

School was not opened till January 2. There were three cases developed up near the Institute buildings after you were here; I think it was about Wednesday or Thurs-

day after. Two in the family of a colored woman, who had been washing for the family of the principal and several others in the village, including Shephers' and Peirs' family, who lost a fifteen year old girl. One of the colored children died.

Altogether there have been eleven cases, possibly twelve, in the village, of whom seven died.

Nothing more is *known* as to its origin.

Yours truly,

W. O. Ellsworth.

REPORT ON DIPHTHERIA IN THE LORAIN COUNTY INFIRMARY.

BY THE SECRETARY.

The newspapers, September 10, reported an outbreak of diphtheria in the Lorain County Infirmary. I wrote the superintendent on that date and in reply he stated that there had been seven cases and one death. He stated that the attending physician, Dr. McLean, of Elyria (our health officer) was of the opinion that defective plumbing had caused the outbreak. This was being remedied in the main building, but nothing was being done in the department for the insane, although one case came from there. He requested me to come up and make an investigation. I stated in reply, that Dr. McLean could be trusted to look after the cases and that I did not consider a visit necessary. I received a second letter from the superintendent, and also one from Dr. McLean, urging me to come in order that the county commissioners might be induced to make necessary repairs to the plumbing in the building for the insane.

I went there on September 17, and visited the institution with Dr. McLean. There had been no recent admission by which diphtheria might have been introduced, and the first case was an old inmate. If emanations from foul drains can cause diphtheria, the cause was there. Extensive repairs were being made in the plumbing of the main building, but I was still able to see that it had been in an exceedingly bad condition, due entirely to faulty construction. There were no traps in the fixtures, nor in the drains, and no ventilation. The soil pipe only extended a little above the highest fixture. Many of the joints between waste pipes and the soil pipe were broken, permitting the escape of sewage into the building.

In the insane department the plumbing was even worse than it had been in the main building. Hopper water closets were placed in the sleeping rooms of the inmates, who were thus, at all times, exposed to the foul air ascending from the drains. No changes, I was informed,

were contemplated in the plumbing of this part of the building. Upon my return I sent the following communication to the commissioners of Lorain county:

To the Commissioners of Lorain County, Elyria, Ohio:

DEAR SIRS: The attention of our Board has been called to the recent outbreak of diphtheria in the Lorain County Infirmary, and at the request of the superintendent, I visited that institution on the 18th instant, for the purpose of looking into its sanitary condition.

Eight cases of diphtheria, with one death, have recently occurred in the infirmary. The conclusion that these cases were due to defective plumbing is undoubtedly correct, and your prompt action in having a thorough overhauling of the plumbing in the main building is to be commended. An examination of the plumbing in the building for the insane shows it to be, if anything, in worse condition than that in the main building. It is evident that this building is at all times permeated with foul gases from the sewer, as the plumbing is so constructed, or in such bad repair, that there is nothing to prevent this.

One of the cases of diphtheria was an inmate of the insane department.

I was informed that it is not your present intention to repair the plumbing in this building. To leave it in its present condition is to invite another outbreak of disease, and a contagious disease among the insane inmates will threaten all the others. You will have accomplished little real good with the repairs now being made unless the plumbing throughout *all* the buildings is placed in a safe condition. We trust that you will have this done at once.

Aside from the plumbing, I found the infirmary clean and in a good sanitary condition, speaking well for the present management. One other matter, however, should be brought to your attention, and that is, the lack of proper means of escape from the building for the insane in case of fire. It might easily occur that the one exit now provided would be cut off, in which case it would be impossible for the inmates to escape. To avoid the possibility of such a calamity a fire escape should be provided.

Hoping the improvements above indicated will be promptly made, I have the honor to be,

Very respectfully,

(Signed) C. O. PROBST, *Secretary.*

Dr. McLean, under date of October 15, informs me that nothing has been done to improve the plumbing in the building for insane. The commissioners, however, will provide a fire escape for this building. No other cases of diphtheria have occurred in the institution.

REPORT ON DIPHTHERIA NEAR PERRYSVILLE.

BY THE SECRETARY.

The board of health of Greene township, Ashland county, sent an urgent request for the State Board to come to their aid in suppressing diphtheria. They reported that they were having great difficulty in enforcing quarantine, and there was fear that the disease would spread to the village of Perrysville.

I went to Perrysville August 21, and at my request the President appointed Dr. Wise to accompany me. We found that malignant diphtheria had developed in a family named Ehrhart, who lived about a mile and a half from the village. As the township board of health had not been long organized, and as this was the first case of contagious disease they had had to deal with, they desired to counsel with the State Board of Health.

The president of the township board, Mr. Mower, and the township health officer, Dr. Covert, drove with us to the house of Mr. Ehrhart. The family consisted of Mr. and Mrs. Ehrhart and eight children. Three of these had died of diphtheria; three were sick, two of them not expected to live, and the other two children had had the disease but recovered. Mrs. Ehrhart had just contracted the disease. She was in daily expectation of confinement. A female nurse from Mansfield, employed by the board of health, and a male relative from Mansfield assisting the nurse, were also in the house. The board had also employed a physician, Dr. Steward, of Mansfield, and was furnishing the family with food and supplies. The house had been placarded, but the card had been torn down by someone. Another card was put up; but it was reported that quarantine was being violated, and this had caused great public excitement, owing to the extreme malignancy of the disease. It was to get advice on how to maintain quarantine and enforce their orders that the State Board was called in. Proper instructions were given them; and we also endeavored to impress relatives living near by with the fact that quarantine orders must be strictly obeyed.

As it was considered highly dangerous for a woman to be confined amid such surroundings, we advised that the mother be removed; and if nothing better could be had, that a tent be provided for her accouchement.

We were unable to learn positively the origin of the disease. The house, the nurse reported, was in a very filthy condition, and that was possibly a factor in increasing the malignancy of the disease.

We were very much pleased with the desire manifested by the board of health to employ all necessary measures for the suppression of the disease without regard to expense.

September 1, Dr. Covert reported that two other children in the Ehrhart family had died of diphtheria, making five deaths from the disease in this family. The township board furnished tents, bedding and clothing, and the remaining members of the family were removed to the tents and the house vacated. The house was then thoroughly disinfected, and no other cases occured.

This affords a striking example of the good that is being accomplished by our township boards of health.

ANNUAL REPORT

N TYPHOID FEVER AT BRADNER.

BY THE SECRETARY.

Bradner October 5, on account of typhoid fever. f about 800 inhabitants, in Wood county, on the Valley and Toledo Railroad, a few miles north of

er a case of typhoid fever occurred in the village. others until, at the time of my visit, sixteen cases occurred.

en without a board of health, but one was organized s summoned there. The health officer, Dr. Furste, the houses in which cases of typhoid fever had of the village is very flat, so that natural drainage ve surface filth. Near the center of the village the tone formation, is almost uncovered, and it is ars in the rock. This rock is very porous. Dr. hat when blasting his cellar a rain came up which hour's time after the rain ceased the water had

vy vaults used, but as a rule fecal matter is simply

this skunk farm, but were unsuccessful, though I must confess our search was conducted with a great deal of caution.

A meeting of the local board of health was called, and measures for preventing other cases of the disease fully discussed. I advised the Board to take immediate steps for the removal of surface filth and the cleaning of privies. Also, that they urge the people to use only boiled water until the fever should disappear. I also advised them to gradually require all houses to be provided with dry earth closets.

You will remember that a year ago the village of Rising Sun, near Bradner, suffered severely from typhoid fever. Also, that for some years Rising Sun has suffered from the disease each fall.

The geological conditions there are very similar to those at Bradner, the village being in large part built on superficial rock. I advised the board of health of Rising Sun, at the time of their epidemic, to abolish all privy pits, and to require the use of tight boxes above ground, i. e., the dry earth system. Also, that the surface of the soil should be kept free from all kinds of filth.

For the first time in many years Rising Sun has remained free from typhoid fever, a remarkable fact, considering its prevalence in the neighborhood. In answer to a letter of inquiry, the mayor, under date of October 18, informed me that there has been but one case of typhoid fever in Rising Sun this year, and that was a case imported from Elmore. Boiled water was not being used for drinking, as I had been informed, only one family resorting to this precaution, but great attention had been paid to keeping the soil free from filth. The mayor says: "As regards vaults we succeeded in getting them all replaced by tubs as you recommended; after we made five arrests. It made matters a little warm, but they had to come to it. We do not allow any garbage, swill or offal from any source whatever to be thrown on the ground. It is put into barrels or other receptacles and removed from the town."

With typhoid fever at Bradner, five miles away, and also in the country around the village, the conclusion is irresistible that their present freedom from the disease is due to these precautionary measures enforced by the board of health. The future of this village as regards typhoid fever will be of much interest.

REPORT ON TYPHOID FEVER AT POINT PLEASANT.

BY THE SECRETARY.

Several communications were received from residents of Point Pleasant, Valley township, Guernsey county, reporting typhoid fever prevailing as an epidemic. The township board of health was notified to look after the sanitary condition of the village, and especially the water supply. Printed circulars on the prevention of typhoid fever were sent for public distribution. Complaint was made later that the township board had taken no action, and I was urged to come to the village.

Dr. Knackley, of Point Pleasant, a member of the school board, reported that he doubted the advisability of opening the schools on account of the fever, and also urged me to come. I went on September 6. The village contains probably 300 inhabitants. It is located on the M. & C. Railroad, at the foot and on the side of a large hill. Dr. Bown, township clerk, and Dr. Knackley are the only physicians there. With these gentlemen I visited the various houses in which typhoid fever had occurred. Dr. Bown was called to the first case, a young girl, April 13. About the same time a second case occurred in a child in a Hungarian family. No connection could be traced between these cases, and there was no community of water supply. Other cases followed until, at the time of my visit, twenty-two cases with three deaths had occurred.

Standing near the school house, which is at the upper end of the village, it was possible to point out, in a comparatively small circle, all but two or three of the houses in which the disease had appeared. Flowing through this part of the village, past the school house, is a small run, dry, however, at this time. The school house privy had been built over this run so that the excreta would be washed away. This privy was recently moved. The run was very filthy, and, at night especially, gave rise to offensive smells. Most of the cases of fever had occurred in houses close to and on either side of this run, which is highly suggestive of its causal relation to the spread of the disease. There are but few privy vaults in the village. The privies are built without vaults, the excreta being deposited on the ground. As a result every dashing rain storm carries with it a greater or less amount of excremental filth to be deposited in the yards, and possibly to be washed into the wells of the houses lower down the hill Owing to the continued drought the wells were all low and many of them nearly dry.

In the village of Hartford, about a mile from Point Pleasant, and in the same township, about twenty cases of typhoid fever had occurred some weeks earlier. There were no deaths. It is noteworthy that in this

village, after a local member of the township board of health, with the help of a sanitary officer, took steps to remove the filth and clean up the village, the disease entirely disappeared, though no change had been made in the water supply, and the wells had been steadily getting lower.

In the afternoon I met the township board of health. After thoroughly discussing the matter the board agreed to employ a health officer and instruct him to visit each house in the village and have the privies, yards and all filthy places thoroughly cleaned. Also to have the ditch cleaned after the plentiful use of lime.

The school board was notified not to open school until after the ditch had been cleaned. Also to provide a tight box for the privy, and provide for the frequent removal of the excrement.

I urged that special attention be given to the water supply, that suspicious wells be closed, and the people urged to use only boiled water for drinking.

REPORT ON TYPHOID FEVER AT MANSFIELD.

BY THE SECRETARY.

By request of the board of health of Mansfield I visited that place October 17. The object of my visit was to assist the local health authorities in determining the cause of typhoid fever, which prevails there to a considerable extent.

The history of the outbreak is briefly as follows: Mrs. Davis, who lives in a new addition facetiously called "Stumpfield" by Dr. Craig, the health officer, because only recently the land has been cleared and many stumps are still standing, was taken with typhoid fever June 10, 1894. Mrs. Davis undoubtedly contracted the disease from her daughter who lived in the village of Washington, near Mansfield. Her case was called malarial fever, and the health authorities did not know of it until several weeks after she was taken sick. This was the first case in that part of the city. There were no other cases until July 20, when her son was taken sick. He had also been to visit his sister in Washington. In August the disease began to spread, and there were twenty cases in that month, nearly all in "Stumpfield." Fifteen cases were reported in September, and seven in October up to the 7th. In all there were fifty-nine cases reported, and we found three additional cases which had been called malarial fever. Ten deaths have occurred. Dr. Craig and myself, with the assistant health officer and sanitary policeman, spent two days looking

isease. We collected the history of thirty-two cases, ook to complete the list after I left.

the facts recorded in regard to these thirty-two cases, , date of illness, water supply, milk supply, drainage ns, and exposure to other cases of the disease.

the cases have occurred in this one section. This omparatively thinly settled, so that the houses are

WATER SUPPLY.

rred in four families where cistern water was being s did not leak, were protected from surface drainage, liable to pollution. In one family where cistern e Davis family, the first case—the disease was ushy family, where five cases occurred, they occasion- the Worrels' well, a deep, drilled well, before the first together afterwards. Mrs. Pitchie, who used cistern ushy when she had the fever, but did not remember vater or other beverage there.

s water from dug wells was used. We did not examine One case occurred where the patient always drank and artesian water at the place where he worked. In

In fifteen cases there was a history of exposure to other cases, but five of these were in one house, three in another, three in another, and two in another.

The soil is clay, and the site of most of the houses elevated. The usual plan for caring for excreta is by a vault lined with plank. So far I have not been able to reach any satisfactory solution of the cause of the trouble.

REPORT ON TYPHOID FEVER AT MEDINA COUNTY INFIRMARY.

BY THE SECRETARY.

The superintendent of the Medina County Infirmary reported that typhoid fever had appeared in that institution and requested me to come there. As I had arranged to be in Bowling Green on August 27, I notified him that I would visit him on the 28th, which I did.

The superintendent, Mr. Zimmerman, gave me a full report of the cases of typhoid fever, of which there had been seven, with one death. Four of the patients were inmates of the infirmary, one an employe, and three were workmen engaged in the construction of a new infirmary building. This building is near the old one. The old building for the insane had been torn down and the ground on which it stood had been excavated. The superintendent thought this had caused the outbreak of typhoid fever.

The drinking water, at the time the cases developed, was obtained from a dug well a few feet from the old building—that is the main building. The water had become very low in the well, and it had been abandoned some time before. The pump was left in the place, and one of the employes and one of the inmates who developed typhoid fever, after the well was abandoned for general use, were known to have used water from it. About fifty feet from this well, immediately in front of the wash house, is an overflowing piped well. Water was used from this to some extent before the dug well was abandoned, but afterward was wholly depended upon. It was necessary to attach a pump to it to obtain this extra supply. The surroundings of this well were not of the best, and I gave instructions to have necessary improvements made.

A careful study of the facts seemed to warrant the conclusion that the dug well was responsible for the cases of typhoid fever, and I directed the superintendent to remove the pump and abandon the well.

It will be remembered that the Board made an investigation of this infirmary (Medina county) some time ago, and condemned it, recommending a new building. This is now being constructed.

Under date of October 22, the superintendent reports that but one case of typhoid fever has occurred in the infirmary since my visit; a domestic having taken the disease September 19.

REPORT ON SEWERAGE OF ATHENS.

BY THE SECRETARY.

September 4, Mr. W. G. Clark, consulting engineer, called at the office and presented plans showing the sewerage system to be constructed for Athens, and asked for the approval of the proposed outlet. Our President was here at the time and examined the plans.

On the same date a letter was received from Hon. C. H. Grosvenor, of Athens, in regard to an alleged nuisance arising from the discharge of sewage from the insane asylum into the Hocking river.

I was directed by the President to go to Athens, where I met Mr. Clark on the following day, and also the health officer, Dr. Alderman, who most kindly placed his services at our disposal. Work had already begun on the outfall sewer, but Mr. Clark stated in advance that the outlet would be changed if objections were made to it. The discharge is made into the Hocking river about 500 feet below a mill dam, which exists just below the east end of Mill street. There is a very good current of water at this point, and the sewage will be rapidly carried away. There are no houses in the neighborhood, although some building has been done further down the river. The Hocking river below Athens is not the source of any public water supply. Should the question of sewage disposal come up in the future, land admirably adapted for filtration areas can easily be commanded. It is probable, however, that the sewage would have to be lifted several feet. Mr Clark assures that this may be done automatically by the use of an electric motor, at a cost not exceeding one dollar per day, as the system is designed for sewage only.

The following report was therefore made to the council of Athens:

September 7, 1894.

To the Mayor and Council, Athens, Ohio:

SIRS: The proposed outlet of the system of sewerage for your village, as shown by plans prepared by Messrs. Clark and Chapin, consulting engineers, and submitted to the State Board of Health, as required by Section 2 of an act passed March 14, 1893, is hereby approved.

Respectfully,

(Signed) C. O. PROBST, *Secretary.*

In the afternoon Mr. Clark, Dr. Alderman and myself examined the river with reference to its pollution by sewage from the asylum. The river presented a fairly good appearance. No odor was perceptible from its banks or from a bridge which crosses it. There was a very slight current. Innumerable bubbles could be seen breaking over its surface, which I judged was due to the liberation of gases formed in the decomposition of organic matter in the water.

We next visited the asylum, and called upon Dr. Dunlap, the superintendent. The sewage of the institution is discharged through a part stone, part pipe, sewer, into the Hocking river some distance above the dam spoken of. This has been going on since the institution was established. There are now over one thousand inmates in the asylum.

Dr. Dunlap gave assurance that he would favor such changes in the disposal of their sewage as would be recommended by the State Board of Health. There is apparently no land belonging to the asylum suitable for sewage filtration or irrigation, but suitable land can be found, and might be obtained, on the river bottom. The plan was discussed of carrying the sewer along the road from the asylum to Athens, hanging it to the bridge which crosses the river, and connecting it with a lateral sewer of the Athens system, which passes along the river bank at this point.

There are several old sewers in Athens which receive considerable house drainage, and which discharge into the Hocking river above the dam. One runs from the court house along Main street to the river, and another along Vine street. There are perhaps others which we did not find. These should be abandoned.

There was considerable typhoid fever in Athens at the time I was there; and cases of malarial fever were also reported. The health officer showed me over the village, and called attention to some of the existing unsanitary conditions. At his request, upon my return, I sent the following report to the Board of Health:

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, *Columbus, Ohio, September 6, 1894.*

To the Board of Health, Athens, Ohio:

GENTLEMEN: The outlet for the proposed system of sewerage for your village having been submitted to the State Board of Health, was duly approved.

In this connection the Board's attention has been called to the fact that a sewer from the court house, and several private sewers, are now, and have been, in use for a considerable time. We strongly recommend and urge that these sewers be abandoned and dug up as soon as connections with the new system can be made.

Your Board should use every possible means to prevent further pollution of the soil by excremental or other filth. In my judgment, this is the prime cause of the prevalence of typhoid fever in the village. While the new sewerage system will remove a part of this, you will undoubtedly find that a large number of your citizens will continue to use some other means to dispose of their household filth. Privy vaults will

still be used for years to come, and unless measures are taken to insure that the contents of these vaults will not pollute the soil, the conditions favoring the development of typhoid fever and other diseases in your midst will continue to exist. Even should all your people abandon their wells and use the public supply lately provided, which is not likely to occur for many years, you will not be free from danger so long as soil pollution goes on. Water tight vaults, or tight boxes above ground, only should be permitted for fecal matter.

The surface drainage of your town should also be improved. At the present time many of your street gutters are choked with grass and weeds, so impeding the flow that in many places foul, stagnant pools of water may be seen. The decaying vegetable matter in these gutters exposed to the sun, after being overflowed with filthy water, is liable to produce malarial fever and other diseases. Without great expense the gutters could be laid with split tile, which would afford a smooth surface, easily kept clean and free from vegetable growth.

Our attention was specially directed to the condition of the Hocking river, which surrounds a considerable part of the village. A mill dam in the stream causes slack water in the greater portion of this part of the river. The sewage from the Athens Hospital for the Insane, and sewage carried by the court house sewer and private sewers referred to above, are discharged into the river above the dam. This has given rise to complaints of a nuisance, and it is desirable that this pollution of the river should be stopped.

It has already been advised that the village should cause its private and court house sewers to be abandoned, and if possible, sewage from the hospital for insane should be kept out of the river above the dam. This matter was laid before the superintendent of the hospital, Dr. Dunlap, and he expressed a willingness to use any possible means consistent with the welfare of the institution, to accomplish this object. Without great difficulty the sewage from the hospital could be taken across the river and discharged into the village sewers.

The removal of the dam, which has been advocated, might fail to give the desired relief if sewage is still discharged into the river near the village. At the present time the Hocking river is a very small stream, and it is questionable whether it would remove the sewage of over one thousand people with sufficient rapidity to avert the creation of a nuisance in the neighborhood of the sewage discharge.

I would suggest that the question of disposing of the hospital sewage be brought before the trustees of the institution at an early date. The assistance of the State Board of Health may be depended upon in arriving at a satisfactory solution of the question.

Respectfully,

(Signed) C. O. PROBST, *Secretary.*

Under date of October 3, Mr. L. E. Chapin, consulting engineer, acting with Mr. Clark in construction of the sewerage system of Athens, wrote as follows in regard to this matter:

"On Friday last Mr. Clark and I made Dr. Dunlap a visit at the asylum, and had a long conference on the subject of a purification plant for the sewage and a modification of the water supply question for the institution. Dr. Dunlap's position is this—he appreciates that the sewage from the institution discharging into the river above the dam is a public nuisance, but he does not think that the Board of Asylum Trustees will take any action in the matter to remedy this nuisance untill they are directed or advised to do so by the State Board of Health.

"Now as you know in the construction of the Athens system of sewerage, we are conveying all sewage to an outfall in the Hocking river below the lower dam, and the Athens people now consider that it will be no more than equitable on the part of the

State that the trustees should take measures to prevent the further contamination of the waters of the Hocking river by the sewage from a State institution.

"Further, as engineers, we are personally interested in the matter, inasmuch as the State has a number of institutions, the sewage of which must be eventually reduced by some method of purification plant in the State of Ohio, and have discussed with Dr. Dunlap the matter of submitting a report to the trustees on the water supply and sewerage systems of the institution, and charge them only a nominal sum therefor."

REPORT ON THE PROPOSED SEWERAGE SYSTEM FOR ASHTABULA.

Upon request of the council of the village of Ashtabula, the President, Mr. Hartzell, and the Secretary, on August 25, 1894, went to Ashtabula and inspected the proposed outlet for sewer district No. 2. The following report was made to council August 30:

To the Mayor and Council, *Ashtabula, Ohio:*

Dear Sirs: In accordance with the provisions of Section 2 of an act passed March 14, 1893, the proposed outlet of sewer district No. 2 of your city was submitted to the State Board of Health for its approval.

The undersigned committee, having on the 25th, instant examined the proposed outlet, respectfully reports for the Board, as follows:

The sewer for district No. 2 designed to carry off both storm water and sewage proper, will, it is estimated, accommodate about 4,000 people. The proposed outlet is into Ashtabula river near Bridge street, which is but a short distance above the river's outfall into the lake. At this point, by dredging, the river is kept constantly about 18 feet in depth. At Mary street, some distance above Bridge street, sewer district No. 1 has its outfall into Ashtabula river. These sewers will accommodate the greater part of the entire population of the city. The river receives in addition the excrement of several hundred men employed on vessels or about the harbor.

In considering the effect the proposed addition of sewage to Ashtabula river will have upon the public health, two questions present themselves: (a) the pollution of the public water supply; (b) the creation of a nuisance in and about the harbor.

The water supply is taken from the shore of Lake Erie without purification, about 2,000 feet west of the natural mouth of Ashtabula river. By artificial means the real outlet of the river is extended into the lake, so that the intake for the water works is about 3,000 feet from the point where the river discharges into the lake. As a rule surface currents in the lake at this point are from west to east, so that impurities in the river are usually carried away from the water supply. It is unquestionably true, however, that at times lake currents are in the opposite direction, so that there is a possibility of impurities in the river, under favoring conditions, gaining access to the public water supply. It may be claimed that this danger has existed for some time, as sewer district No. 1 has discharged into the river for some years, and that no apparent evil has resulted from it. We must remember, however, that up to this time but few water-closets have been connected with the sewers, and it is pollution of this character that is most liable to produce disease. It is reasonable to suppose that the majority of your houses will eventually be provided with water closets, and as privy vaults are a menace to health, the sooner this is brought about the better, and so there will be an increasing excremental pollution of the river and an increasing danger to the public water supply.

Even under present conditions we are deeply apprehensive that a conjunction of favorable conditions will, without warning, produce an outbreak of disease among public water consumers. To discharge the sewage of district No. 2 into the river so near its mouth will very greatly increase this danger. Unless, therefore, steps are to be taken to change the source of your water supply by removing the intake to a point beyond danger of contamination, or to provide for the continuous purification, by adequate filtration areas, of the present supply, we are of the opinion that it would be unwise to discharge additional sewage into Ashtabula river unless it is first purified. The turning of the raw sewage into water courses is always to be deprecated; and in view of the growing sentiment against such pollution, and the possibility of legislation in the near future absolutely prohibiting it, any system of sewerage adopted at this day should contemplate, ultimately, the purification of the sewage. We have two examples in our own State—at Canton and Oberlin—showing that sewage can be effectually purified and without burdensome expense.

There remains the probability of creating a nuisance by the additional discharge of sewage into the river. We believe the danger of so doing is not great. The fact that the sewage will be discharged into eighteen feet of water which gradually flows into the lake; that this water is frequently agitated by passing boats of deep draught, favoring oxydation; that the channel is dredged once or oftener every year, and finally, that the Ashtabula river is subject to freshets, which would tend to remove all deposits, favor this view.

As part of sewer district No. 2 is so low that the river affords the only possible outlet for drainage, without pumping, we approve of the proposed outlet of this district, subject to the restrictions contained in the foregoing with reference to a change in the near future of the source of your public water supply, or else an adequate purification of the present one.

We desire to express our sincere thanks to your mayor, members of council, city engineer and health officer, for courtesies which enabled us to conduct the investigation under the most favorable circumstances.

(Signed) E. T. NELSON,
JOSIAH HARTZELL,
C. O. PROBST,
Committee.

REPORT ON THE PROPOSED SEWERAGE SYSTEM FOR HAMILTON.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, *November* 27, 1894.

To the Commissioners of Sewers, Hamilton, Ohio:

GENTLEMEN: In accordance with the provisions of Section 2 of an act passed March 14, 1893, the undersigned committee of the State Board of Health, on November 22, 1894, inspected the outlets of your proposed system of sewerage, and the same are hereby approved.

The Board desires to state, however, that it considers there is a possibility that sewage from sewer district No. 3 will in time be of sufficient quantity to create a nuisance along the river front. This possibility has happily been anticipated by your commission, and the grades in this district will permit of the extension of the outlet sewer so as to form a junction with the combined outlet sewers for districts 1 and 2, should this become necessary.

The Board is greatly pleased to note that the whole system has been arranged with the view of ultimately purifying the sewage before turning it into the river. But for this commendable foresight on the part of your commission it would be necessary for the Board to withhold its approval.

Your attention is respectfully called to the necessity for regulating connections with the public sewers, and the construction of house drains and plumbing. Unless such work is done in a safe manner sewers may become an actual menace to the public health. It is recommended that your commission formulate an ordinance to be presented to council for adoption, which shall designate how all such work shall be done, and provide for an inspector to see that the ordinance is properly enforced.

The thanks of the committee are due, and are hereby tendered, to the members of your commission for the courtesies which enabled it to perform its work to the best possible advantage.

Respectfully submitted.

(Signed)

BYRON STANTON, M. D.,
THOS. C. HOOVER, M. D.,
C. O. PROBST, M. D.,
Committee.

REPORT ON THE PROPOSED SEWERAGE SYSTEM FOR MARIETTA.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, *March* 14, 1894.

MR. C. M. WILLIS, *Secretary Committee on Sewerage, Marietta, Ohio*:

DEAR SIR: The State Board of Health, through its committee on sewage disposal, has duly considered the plans for sewering the city of Marietta, as exhibited by the plans of the engineer, and reports as follows:

The proposal to discharge sewage into the Muskingum river above the dam is not approved, as it is believed such a procedure will eventually create a nuisance. This opinion is based on the conditions known to exist in other cities in Ohio where nuisances have been created by the retention of sewage in slack water by a dam.

This objection may possibly be met by arranging your sewerage system so as to conduct all sewage below the dam at some future time. The Board does not recommend this plan, as it has been found difficult to change the outlet of a sewer, once it is established.

The Board recommends that the system be so arranged that all, or practically all, of the sewage can be discharged at one point. This recommendation is made in view of the fact that there is great probability that legislative action will be taken in the near future to compel corporations to purify their sewage before turning it into streams affording public water supplies; and to purify sewage it is necessary, in practice, to collect it at one point.

The Board further recommends, that in certain portions of the city where wet cellars are encountered, additional means should be provided for subsoil drainage; and would emphasize the fact that one of the important functions of a sewerage system is the permanent lowering of the ground water, so as to insure dry cellars and foundation walls, conditions favorable to health.

Respectfully submitted for the State Board of Health.

(Signed)

JOSIAH HARTZELL,
E. T. NELSON,
C. O. PROBST,
Committee.

At the request of the Marietta committee on sewerage, the Secretary visited Marietta and looked over the ground. The report of the Board's committee, after further consideration, was reaffirmed.

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At a meeting of the State Board of Health held October 26, 1894, Mr. L. E. Chapin, consulting engineer, presented modified plans for the sewerage of Marietta.

"On motion of Dr. Hoover, duly seconded, it was voted to approve the plans for the sewerage of the city of Marietta, as submitted by Mr. L. E. Chapin, consulting engineer, subject to the following change, *i. e.*, that the outlet for sewer district No. 1, should be merged into the outlet sewer for sewer district No. 2, said outlet to be located at the foot of Post street."

REPORT ON THE PROPOSED SEWERAGE FOR MARYSVILLE.

BY THE SECRETARY.

October 8, the mayor and a member of the board of health of Marysville called at the office and invited me to visit that village. The local board, they stated, was endeavoring to secure the introduction of sewerage, and desired the support of the State Board.

I went to Marysville October 10, and met the full board of health. The situation there is as follows: A public water supply was introduced some years ago. This induced a great many persons to place water closets and baths in their houses. There are several short lines of sewers for storm water, but only a few houses have been connected with them. Flowing through the central part of the village is a run, which affords a natural outlet for surface drainage. In addition, it receives a considerable amount of house drainage, a number of private drains opening into it. Many privies and stables also drain into it. As a result, this run has become exceedingly foul and offensive. The only plan for effectually abating the nuisance thus caused is sewerage, and the board of health was circulating a petition among the citizens, praying council to submit the question of sewerage to a vote of the people. The members of the board were of the opinion that the majority would be in favor of sewers. They wished to have the State Board of Health support their petition to council, which was to be presented on the day following my visit.

At the request of the board I made them a report as follows:

OHIO STATE BOARD OF HEALTH,

OFFICE OF THE SECRETARY, COLUMBUS, O., *October* 11, 1894.

To the Board of Health, Marysville, Ohio:

DEAR SIRS: On the 10th instant, at your request, I examined into the sanitary condition of your village, with special reference to its needs as to sewerage.

The most objectionable feature of your village, from a sanitary standpoint, is the run which passes through it. The run is already polluted to a degree that renders it a

nuisance, detrimental to the health and comfort of many of your citizens. The condition will undoubtedly grow worse from year to year, unless measures are taken to prevent it. This run is admirably adapted to remove surface drainage; and if it were kept open, and everything but storm water kept out of it, the run would be unobjectionable.

The easiest way to deal with the run will be to provide a system of sewerage to carry off the filthy drainage which it now receives. As you have introduced a public water supply, sewerage has become a matter of necessity, for a public water supply always means a greatly increased amount of filthy water to deal with.

Sewerage will be a benefit to your village in other ways than the getting rid of the nuisance connected with the run. The prevalence of typhoid fever, consumption, diarrhœal and other diseases, is almost invariably lessened by the introduction of a proper system of sewerage.

Your board should, therefore, urge upon council and upon your citizens, the necessity of sewers. You should also condemn the run as a nuisance; and if sewerage is not provided, should take steps to lessen the nuisance, as much as possible, in some other manner.

Trusting you will be able to secure for your village this greatly needed improvement, I have the honor to be,

Very respectfully,

(Signed) C. O. PROBST, *Secretary.*

REPORT ON SEWAGE DISPOSAL AT OBERLIN.

BY THE SECRETARY.

During the winter of 1893–4 complaints were made to this Board that the sewage of Oberlin was polluting Plum creek, creating a nuisance and spoiling its waters for stock purposes, so that the dairy products of cattle using the water were unsalable in Oberlin. Your Secretary was appointed a committee to investigate the complaint, and, if the facts should prove to be as represented, to bring the matter to the attention of the Oberlin authorities, and endeavor to have them abate the nuisance.

By corresponding with the city engineer of Oberlin, and with the health authorities, it was learned that the sewage of Oberlin was being turned into Plum creek, but from the beginning, in introducing the sewerage system, it had been recognized by the sewer commissioners and city engineer that it would be necessary to purify the sewage before discharging it into Plum creek. Land adjacent to the village had been purchased for that purpose, and the commission was considering what plan of sewage disposal would be best suited to local conditions. Later I was informed that experiments were being made in sewage disposal by intermittent filtration.

On June 20, having been called to that part of the State on other business, I visited Oberlin and spent the day studying their plans of sew-

erage and sewage disposal. Prof. Talbot, of the University of Illinois, happened, fortunately, to come to Oberlin on the same day, and for the same purpose.

I am greatly indebted to Mr. W. B. Gerrish, city engineer, and to Prof. A. A. Wright, member of the board of sewer commissioners, for many courtesies extended to me while there, enabling me to use the time at my disposal to the best possible advantage.

I would first briefly note the essential points concerning Oberlin's sewerage system. The system was built in 1893 and placed in operation the latter part of that year. It consists of a trunk sewer of which 1,360 feet are of 8-inch pipe, 790 feet of 10 inch pipe, and 8,650 feet of 18-inch pipe. The district sewers consist of 25,000 feet of 6-inch pipe and 55,000 feet of 8-inch pipe. There are twenty-three Rhodes-Williams flush tanks in the system, and a subsoil pipe of agricultural tile is laid at the side of all district sewers, with which all cellar connections are made. Ventilation is secured by manholes with open covers, and by open house drains and soil pipes. The system is built strictly on the separate plan. All plumbing and drain laying must be done by persons licensed by the board of health. Traps on the house drain are not permitted. The system at present will provide for the sewage of about one-half the population. The cost of the sewerage system was about $20,000.

For the disposal of the sewage the city purchased fifteen acres of ground one-half mile from the corporate limits, at a cost of $1.500. This field is bounded on the north by a road leading to Oberlin. Running eastward through the field, near its middle, is Plum creek. The land between the creek and the road mentioned is much higher than the out-

OBERLIN SEWERAGE PLANT.

fall sewer, and will not be used for disposal purposes. It has been plentifully planted with trees and will be converted into a park. A considerable portion of the land south of the creek is also above sewer level, leaving about six acres available for filtration or irrigation. Two and a half acres of this available ground have been prepared for intermittent filtration by grading gently towards the creek, and by underdraining with agricultural tile of two and a half to four inches laid at a depth of three to four feet, and twenty feet apart. The two and a half acres are subdivided into nine areas of about equal size by means of ridges of earth a foot high. To the east of the filter beds separated from them by a drive way, two and three-quarters acres have been set apart for broad irrigation. This area has not been prepared by grading or by tiling, except a few hundred feet of tiling for draining some low places. It is sowed in grass. Of the nine filtering areas three are seeded to Italian rye grass, three to alfalfa, and three are planted with corn and other garden vegetables. The outfall sewer terminates south of the filter beds, and at a higher level. Near its terminus, at a manhole, a short branch sewer joins the main sewer, giving two outlets. Settling basins, which are merely pits in the ground twenty-five feet long, four feetwide, and three feet deep, are at the ends of the outlets. A board at the top and near the middle of each basin, dips a few inches into the sewage and keeps back floating matter. Ditches made by running a furrow with a plow and trimming up the edges, serve to convey the sewage from the settling basins to the filtering beds, or to the irrigation field, as may be desired. Simple mud dams in the ditch stop the sewage wherever desired and cause it to overflow the surface selected for filtration or irrigation. The effluent from the filter beds is carried by the drain tile to Plum creek. The settling basins require emptying once a week. A portable tank fitted with a pump with a 4-inch suction, is used for this purpose. Considerable odor is caused by the emptying of the basins, though this is probably not carried as far as the highway or to the farm houses nearest the field. At least no complaint of this was heard. The sludge is either spread over the grass on the hillside south of the disposal works, or is plowed under. Bad odors, it is claimed, quickly disappear after spreading the sludge on the grass. It was interesting to note the remarkably luxuriant growth wherever the sludge was thinly spread. One could stand at any part of the field and mark where the sludge wagon had been by the deep green color and thick growth of the grass. Where the sludge was dumped in a mass the grass was killed. So on the field flooded with sewage—its track was plainly marked by the appearance of the grass, showing, also, that the field had not been evenly flooded. This difficulty, *i. e.*, uneven flow of the sewage, had been met with in flooding the filtering areas, for there was a tendency for the sewage to collect in

little channels. Occasionally it will work holes down to the underdrains and unpurified sewage then escapes into the creek. It is expected that this tendency to concentration of sewage flow will have been removed when the rye grass and alfalfa attain some growth. This difficulty seems to have been overcome at Freehold, N. J., according to the report of Geo. E. Waring, Jr., as published in the 13th annual report of the State Board of Health of New Jersey. At these works a line of broken stone is laid a short distance from and parallel to the carrier ditches, so that the overflowing sewage is caught and spread out on its way over the filtering area. I have called the attention of the Oberlin engineer to this plan and have suggested that he should try it on one area.

At the present time—June, 1894, the daily sewage flow varies from 35,000 to 45,000 gallons. The present filtering area, it is calculated, will dispose of 80,000 gallons per day.

The point of greatest interest in connection with this sewage farm, excepting only its ability to properly care for the sewage, is the remarkably low cost at which it was constructed. Those having the matter in charge are to be congratulated on having apparently placed the disposal of sewage, so far as the expense is concerned, within the reach of every sewered village in the State. Local conditions, it is true, determine to a large extent the expense; but the simplicity of the whole system at Oberlin must commend it to all economists.

The expense of the sewage farm at Oberlin was as follows:

6,000 feet of agricultural tile laid	$256 00
Tool house	55 00
Grading and incidentals	166 00
Pump and tank	42 00
Twenty acres of land	1,500 00
Total	$2,019 00

The soil is not specially favorable for sewage disposal. About Oberlin the soil generally consists of yellow clay underlaid at a few feet with stiff, blue clay, and it was feared that sewage filtration would be impracticable. It was found, however, that that part of the field next the creek contained considerable sand mixed with the clay, while in the upper part of the field numerous strata of gravel were found. The land drains freely and there has been no trouble from retention of water.

The farm is free from nuisance. Slight sewage odor is noticeable in walking along carrier ditches or over ground with sewage on it, but this is not discoverable a short distance away. There was no odor from the stream into which the sewage effluent is discharged, at least none from

the part of the stream examined, embracing its flow through the farm and several hundred yards below.

Plum creek flows through the village of Oberlin and, about six miles below the sewage farm, joins Black river. Two miles from this junction the city of Elyria takes its water supply from Black river. I was informed by the health officer of Elyria, Dr. McLean, that the public water supply is used only for fire protection and sprinkling; wells being entirely relied upon for potable water. In dry weather Plum creek has little or no flow, or would have but for the overflow from the water works. The water supply of Oberlin is obtained from Vermillion river about six miles from the village, and is delivered by gravity to the pumping station. There is considerable overflow into Plum creek, and this, together with the sewage effluent, keeps up a constant flow.

There is some drainage into this creek within corporate limits, but this will be stopped.

In this connection is worthy of note a plan adopted by the city engineer for improving this creek within the village—a plan which I should like to see adopted in other places where small streams flowing through villages present an unsightly appearance, and tend to create a nuisance. An 8-inch drain has been laid through a part of Plum creek and the creek banks and drain covered over with sod. In some places the drain is covered with broken stone. The effect is to greatly beautify the landscape; and I should judge that the value of property along the stream would be sufficiently enhanced to cover the cost of the improvement. The ordinary flow is easily cared for by the 8-inch drain. Flood water will pass through the sodded run.

I called on Mr. Carrothers, who lives on a farm just north of the sewage farm. He was one of those who complained to this Board of the pollution of Plum creek. His attitude toward the sewage farm was one of hopeful expectation. He said the nuisance of which he complained seemed for the present, to have been removed, and he trusted they would have no further trouble. The objection formerly urged against his butter and milk, on account of watering his cows at Plum creek, had been withdrawn. So far as he knew other farmers living along the stream were not now complaining of sewage being turned into it. Mr. Hamilton owns a farm just east of Mr. Carrothers, which he rents. He accompanied us on one of our trips to the sewage farm. He stated that he had lost an opportunity for selling his farm on account of the proximity of the sewage farm. This was due entirely to prejudice which will doubtless be removed in time.

Four samples of water were collected and submitted to Professor Howard for examination. One from Plum creek just above the sewage

farm, one from the creek a few hundred feet below, and one of sewage just before it entered the settling basin or pit, and one from the tile drain underlying a filtering area which had been flooded during the morning. The first two samples were collected about 11 A. M., the last two about 4 P. M.

The results of examination were reported by Prof. Howard as follows:

COLUMBUS, O., *July* 13, 1894.

DR. C. O. PROBST, *Secretary of State Board of Health:*

DEAR SIR: I have examined the samples of water received from Oberlin, with the following results:

Collection June 20.

1. Plum creek above filter bed.
2. Sewage.
3. Effluent.
4. Plum creek below filter bed.

Collection July 2.

5. Plum creek above filter bed.
6. Sewage.
7. Effluent.
8. Plum creek below filter bed.

Parts per 100,000.

	Oxygen required.	Free ammonia.	Albuminoid ammonia.	Nitrous acid.	Chlorine.	Total solids.	Mineral matter.	Organic & volatile
1.	1.02	.026	.034	.001	3.52	51.6	34.8	16.8
2.	7.92	1.320	.680	none	8.64	112.8	62.4	50.4
3.	2.16	.180	.090	.005	4.44	71.6	50.2	21.4
4.	1.31	.058	.064	.010	3.56	57.4	38.2	19.2
5.	.96	.012	.024	.001	1.52	36.4	25.6	10.8
6.	3.60	.920	.320	none	5.00	85.2	54.2	31.0
7.	1.84	.090	.048	.010	3.00	59.6	43.4	16.2
8.	1.21	.036	.038	.015	2.16	42.4	30.0	12.4

These two series of results are interesting as indicating the variations resulting from certain changes in conditions. While it is a matter of information with you, it may be well to note here that the first set of samples were taken during commencement week, when Oberlin contained a somewhat larger population than at the second date. This is well shown in those determinations of organic matters, or of substances accompanying organic matter. This will not of course explain the reduction in the total solids in the creek, but I am informed by Mr. Gerrish that on the Thursday night preceding the collection of the last samples, there was a heavy shower. To this, in part, is to be ascribed the reduction in the organic constituents shown. It will be noted that there is a considerable reduction in the chlorine in the effluent as compared with the sewage. This is a constituent of common salt, and is a measure of that substance. This is a result which I had not anticipated, but duplicate determinations confirm the certainty of this result. The examination shows that the water of Plum creek above the filter bed is of very poor quality; that a very large proportion of the organic constituents of sewage is deposited in the filter beds, as is shown by the greatly improved quality of the effluent; and that after this had been introduced into the creek, while the deterioration of the water of the creek is shown, it is not a series contamination of the water of that stream.

Respectfully submitted.

(Signed) CURTIS C. HOWARD.

Analyses of the sewage and effluent were made May 14, 1894, with the following results as taken from a report published by the city engineer.

Parts per 100,000.

	Free ammonia.	Albuminoid ammonia.	Total solids.	Oxygen consumed.
Sewage	2.6256	1.6080	4.2336	11.135
Effluent	0.0918	0.0343	0.1261	0.510
Per cent. removed	96	98	97	95

If Oberlin's attempt to purify her sewage should prove to be successful, as it bids fair to be, we will have within our own State, including Canton's sewage works, examples showing that it is practicable and without burdensome expense, to purify all sewage turned into our lakes and streams.

REPORT ON SEWERAGE FOR WARREN.

OHIO STATE BOARD OF HEALTH,
OFFICE OF SECRETARY, COLUMBUS, O., *March* 15, 1894.

MR. R. W. PADEN, *Chairman Sewer Committee of Council, Warren, Ohio:*

DEAR SIR: In compliance with your request, a duly appointed committee of the State Board of Health, consisting of Prof. E. T. Nelson, President, Dr. C. O. Probst, Secretary, and Josiah Hartzell, visited Warren on March 9.

To the committee was extended every facility for acquiring a good understanding of the sanitary features of your proposed sewers; by conference with the members of your committee, with members of your board of health, and other citizens; by examination and explanation of your maps by your city engineer, and by a personal inspection of proposed routes and outlets of sewers. We take this opportunity of extending to you, and to the other citizens of Warren who gave needed assistance, our sincere thanks for courtesies received.

We feel constrained, before proceeding further, to express our approval, and even our admiration, of the thorough, systematic and intelligent methods which characterize the work of those entrusted with the care of Warren's sanitary interests. The plans in operation, in non-sewered districts, for regulating the storage of excreta, and your disposal of the same, are features worthy of wide adoption. It would be difficult to conceive of a more convincing indication of popular enlightenment than your well sustained effort in the attempt to reach so high a grade of excellence in these, and other matters which came to our knowledge.

It is, however, true that in respect to quality of water supply and the disposal of sewage, both present and proposed, there is, in Warren, much room for improvement. We were informed that measures looking toward greater purity of the water were in contemplation.

In regard to the sewers we beg to report the result of our observations as follows:

The general course of the Mahoning river through the city is from north to south. Near the north line of the city is a dam, at Summit street. In the south-central part is the dam at Market street. The water pocket formed by the last named dam is skirted by the most important and thickly populated part of the city.

It is to be regretted that the flow of running water in that part of the river's channel being within the city could not be unobstructed. The contiguity of a running stream, uncontaminated by sewage, would be unobjectionable. The contrary is true of ponds, especially of stagnant waters not derived directly from springs, but consisting rather of the drainage of the watersheds of the upper stream.

In Warren we find such a body of water, which, in dry seasons, must necessarily become very objectionable. In the bottom of this dam is stored the debris and scourings of streets and roads for many years. The most objectionable tributary to this dam is the outlet of the Market street sewer.

We do not feel called upon to dwell upon this feature. A public which evinces such an intelligent appreciation of approved sanitary methods must comprise in its body those who are entirely capable of giving all merited criticisms. These are not therefore required of us, and it is besides always most desirable that the cure for such evils proceed from within rather than without.

It was not surprising to find those who desired the retention of the dam because the presence of the water body is pleasing to the eye. The park effect of the river, and its banks, is not a feature to be despised. The lagoons designed by Frederick Law Olmsted constituted a capital attraction at the late World's Fair. They were deepest at the two ends, and the constant current maintained in them assured a purity equal to that in Lake Michigan. In the pond at the 57th street entrance, the prettiest on the grounds, only a feeble surface flow could be kept up. Mr. Olmsted has recommended, and the park commissioners have ordered, the latter to be filled up.

The situation warrants these suggestions:

1st. Divert all the sewage tributary to the Market street sewer into the Pine street sewer, reserving the former for storm water exclusively.

2d. Assuming that the lower dam is to remain, build an exit low enough to permit the occasional outflow of all accumulations.

3d. Let all sewer routes converge to one point of outflow below the city.

Having in view O. L. Vol. 90, March 14, 1893, we will say that no sewer plan contemplating the delivery of crude sewage into any part of the dam can be approved by this Board.

The relations sustained by the water in the upper dam to the welfare of the city easily suggest inquiries that may arise, and difficulties that may present themselves, on the part of those having riparian interests below the city.

This is not the place for a discussion of the subject of stream pollution. But it is entirely pertinent to advise:

1st. That in building sewers the separate system be strictly adhered to—no rain or storm water admitted.

2d. That the outfall of all sewers be at, or near, the same point, and

3d. That the subject of sewage treatment, with a view to obviating the pollution of the Mahoning river by delivery therein of the wastes of your city, engage your early and earnest attention.

Respectfully submitted.

(Signed)

JOSIAH HARTZELL,
E. T. NELSON,
C. O. PROBST,
Committee.

REPORT ON A PROPOSED ADDITIONAL WATER SUPPLY FOR BOWLING GREEN.

BY THE SECRETARY.

The board of health of Bowling Green reported that the water works company of that village was about to introduce additional supplies, taken from an old quarry in the central part of the town, and it was feared that the water was unfit for use. I was requested to come there and make an examination of the proposed supply, which I did on August 27.

Water works were introduced into Bowling Green a year ago, the supply being obtained from bored wells situated at the edge of the village. The works are owned and operated by a foreign company. There has been no question as to quality of water, and none as to quantity until during the drought of the past summer. The wells then began to fail, and it was necessary to stop the use of water for sprinkling. This raised quite a cry from those whose lawns were suffering for water, and the company, in seeking for additional supplies, proposed to make use of a well which some years before had been drilled near a stone quarry. The well was not used after boring and the quarry was extended until it took in the well.

This quarry is an immense hole, fifteen or eighteen feet deep, and was about half full of water. The board of health at first understood that it was the water standing in the quarry that the company proposed to use, and sent a sample of it to us for examination. When it was learned that they proposed to use water from the well there were still many who feared this water was polluted and unfit for drinking.

The company fitted up an engine and pumps and emptied the quarry. Considerable filth was found in the bottom, which was treated with lime. It was reported that formerly, when this quarry had been emptied of water, the wells in the neighborhood were exhausted. This was not the case on this occasion.

The well from which it was proposed to pump is 180 feet deep, being fourteen inches in diameter for the first eighty feet, and eight inches for 100 feet.

I met the health officer and members of the board, and the superintendent and one or two officials of the water works company, and obtained as much information as possible. I am also indebted to Mr. Evers, a member of council, who showed me about the village and gave me considerable information.

In the evening, by invitation, I addressed the council on the subject of sewage disposal. Sewerage is greatly needed by Bowling Green, but the disposal of it will be a difficult problem.

The water works company agreed to furnish a sample of water from the well in the quarry after it had been pumped for twenty-four hours. The sample was to be collected in the presence of representatives of the board of health and of the water works company. Inasmuch as there was a strong feeling on the part of many citizens, including several of the physicians, that this water should not be used, I deemed it wise to have my opinion in the matter supported by that of the President. At my request, he went to Bowling Green on September 3, and made an independent investigation.

The following report was received from Professor Howard:

COLUMBUS, O., *October* 8, 1894.

DR. C. O. PROBST, *Secretary Ohio State Board of Health, City:*

DEAR SIR: I have examined the two samples of water received from Bowling Green, with the following results:

No. 1. Sample received August 22, water from stone quarry.

No. 2. Sample received September 1, water from well in quarry.

Parts per 100,000.

	Oxygen required.	Free ammonia.	Albuminoid ammonia.	Nitrous acid.	Nitric acid.	Chlorine.	Total solids.
1.	.97	.009	.030	.001	.035	2.48	49.2
2.	.16	.008	.006	.002	.015	1.24	48.6

In No. 1 the oxygen required and albuminoid ammonia are so high that an unfavorable opinion would have to be formed of the water. The general character of the figures indicates that the water is suffering from a recent contamination rather than from one of long standing.

In No. 2 the free ammonia is higher than could be desired, but all the other constituents are so satisfactory that the sample could hardly be condemned for this alone; with this exception the water is quite satisfactory in character as indicated by these figures.

Yours truly,

CURTIS C. HOWARD.

The President called at the office September 4, and after hearing the report from Professor Howard, joined in the following report to the water works company of Bowling Green, a copy of which was sent to the board of health:

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, O., *September* 6, 1894.

To the Bowling Green Water Co, Bowling Green, Ohio:

DEAR SIRS: After having investigated the proposed additional water supply for Bowling Green, to be obtained from the well located in what is known as Royce quarry, we respectfully report that in our judgment the water from this well may be used without endangering the public health.

A chemical analysis of water taken from the well after twenty-four hours' continuous pumping, indicates that it is free from pollution. Sample of the water taken from the quarry, before it was emptied by pumping, was also submitted to chemical examina-

tion. This showed that the water in the well is of a different quality from that in the quarry, and that the well does not receive water from the quarry.

The upper part of the well must be tightly cased to prevent surface water getting into it, and the quarry must be kept free from water. With these conditions fulfilled the use of the well for additional water supplies is temporarily approved.

(Signed) C. O. PROBST,
E. T. NELSON,
Committee.

APPROVAL OF WATER SUPPLY FOR GALLIPOLIS.

December 19, 1894.

MR. HOLLIS C. JOHNSTON, *Acting Secretary of Water Works Trustees, Gallipolis, O.:*

DEAR SIR: The proposed source of water supply for the city of Gallipolis having been duly examined, as required by Section two of an act amending the act to create and establish a State board of health, the same is hereby approved.

Respectfully,

(Signed) B. STANTON,
THOS. C. HOOVER,
C. O. PROBST,
Committee.

INVESTIGATION OF A PROPOSED EXTENSION OF THE WATER SUPPLY OF LANCASTER.

BY THE SECRETARY.

My attention having been called to the fact that the city of Lancaster was about to extend its public water supply, I notified the water works trustees that it was necessary to secure the approval of this Board.

After some delay the secretary of the water works board made a formal request for such approval. I was appointed by the President to go to Lancaster and make the necessary examination, which I did on the 15th of September.

Lancaster's water works were built in 1880, and are owned and operated by the city. The present daily capacity is about 1,200,000 gallons. Water is obtained from a filtering gallery about 700 feet long, connected with a well from which the water is pumped to a stand pipe with a capacity of 133,000 gallons. The gallery has brick side walls and arched top, cemented, and is four feet wide and four and one-half feet high. The well is eighteen feet in diameter and twenty feet deep.

The gallery is located on a river bottom, between the Hocking canal and Hocking river. The distance from the gallery to the river is from two to three hundred yards. The bottom of the canal is considerably higher than the surface above the gallery. The ground beyond the canal towards the town rises to a hill 250 feet or more higher than the canal. Several inde-

pendent sewers run down this hill, pass under the canal and over the filtering gallery, and discharge onto the river bottom beyond. A slight rise in the surface towards the river serves to retain most of this sewage on the bottom. The geological formation of this hillside and bottom has probably protected the water supply from pollution. On the high ground there is a deep deposit of sand and gravel underlaid by a thick deposit of clay. In this part of the city wells obtain their water from the ground water above the clay. This clay layer seems to extend down the hill, under the canal, but over the filtering gallery and onto and possibly under the river.

This gives a complete protective cover to the public water supply, which is obtained from a deposit of sand and gravel under the clay. This cover, it is true, was pierced when the filtering gallery was constructed, but great care was taken to replace the cover.

The gallery has furnished a continuous and unfailing supply. Even this year, with its almost unprecedented drought, there has been little or no diminution of the supply, and it is only on account of the increased demand for water that an addition to the supply is proposed.

I called on the health officer, Dr. Hershberger, and three or four of the old physicians of Lancaster, and questioned them in regard to any sickness ever having been traceable to the public water supply. All were of the opinion that such had never been the case.

I met the board of water works trustees and went with them over the ground of the proposed new filtering gallery. At the upper end of the proposed gallery, by an old mill, there is a spring, and it was proposed to include this in the new water supply. This spring breaks out at the foot of the hill referred to, and is above the protective clay layer.

The abominable practice exists in Lancaster of using abandoned wells for cess-pools. Many of the houses are provided with bath and water closets without sewer connection, and a frequent expedient in getting rid of such waste is to run it into an old well or uncemented cess-pool. The soil is so porous that the liquid readily drains away, and such places rarely need emptying. Wells are still used by nearly one-half the people.

In spite of these conditions there does not seem to have been an unusual prevalence of typhoid fever or other water borne diseases. This, I think, is attributable to the excellent filtering qualities of the soil. None can predict how much longer the inhabitants of Lancaster will escape punishment for this flagrant violation of sanitary requirements.

Three samples of water from Lancaster were examined by Prof. Howard, who made the following report September 4:

A. Bauman, Esq., Lancaster, Ohio:

DEAR SIR: I have examined the three samples of water received from you, with the following results:

Oxygen required.	Free ammonia.	Albuminoid ammonia.	Nitrous acid.	Nitric acid.	Chlorine.	Total solids.
1. .20	.388	.009	.003	.214	1.92	65.8
2. .09	.006	.008	trace	.154	2.60	52.4
3. .12	.008	.007	.001	.724	6.66	86.4

These figures express parts per 100,000 of the various constituents named. In making an interpretation of these figures it would be well if I knew the sources of the various samples, but unfortunately you do not state which is which in your letter, only that one is the public water supply and the two others from two wells. However, without having this information, I will make the following statements:

The very large quantity of free ammonia in one suggests contamination with some decaying organic matter. The other constituents are not so large but that if this water were from a well 100 or more feet in depth, this opinion would have to be modified. This illustrates one of the difficulties in my not knowing more of the nature of the source of these samples. I should imagine that two and three are from wells from the character of the results. If so, they are waters of fair quality. I leave tomorrow for a ten days' absence, but if you will send me a full description of the source of these samples I will be able to make a fuller statement as to their quality. I would like to see the results obtained from Chicago. I subsequently learned that the sources of the samples were as follows:

No. 1 from the G. E. Harman well.
No. 2 from the city water works well.
No. 3 from the J. V. Kinney well.

A second sample of the public supply, collected by the health officer, was examined by Prof. Howard, who reported October 8 as follows:

DR. C. O. PROBST, *Secretary Ohio State Board of Health, City:*

DEAR SIR: I have made a chemical examination of the sample of water received from Lancaster, with the following results:

Parts per 100,000.

Oxygen required.	Free ammonia.	Albuminoid ammonia.	Nitrous acid.	Nitric acid.	Chlorine.	Total solids.
.10	.003	.007	.001	.108	1.84	44.5

These figures indicate that this sample of water is of better quality than samples two and three of waters reported September 4, and of decidedly better character than sample one, reported that date. This is especially evident in the free ammonia, nitric acid, chlorine and total solids. These figures, taken in connection with the statement of the sanitary survey of the source of the water, lead me to believe that this water is of a quality to make it suitable for drinking purposes.

Respectfully submitted.

(Signed) CURTIS C. HOWARD.

On receiving this report I made the following report to the water works trustees:

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, O., *October* 9, 1894.

To the Board of Trustees Lancaster Water Works, Lancaster, Ohio:

GENTLEMEN: In compliance with your request, and with the provisions of section 2, of an act amending the act establishing the State Board of Health, I visited your city on September 15, 1894, and inspected the source of the water supply proposed as an addition to your present supply.

The same is hereby approved subject to the following conditions:

(1.) The spring near the old mill, at the upper end of the proposed filtering gallery, is not approved as a part of the new supply.

(2.) The sewage which is now discharged onto the river bottom near your filtering gallery must be diverted to some distant point.

(3.) The clay cover which protects the source of your water supply and which will be cut through in extending the filtering gallery, must be replaced with proper care. As a complete sewerage system, which will provide for the needs of your entire city, is urgently demanded, and, it is hoped will soon be built, it is suggested that in making the changes in sewerage above noted to guard against pollution of the water supply, attention shall be given to making the new sewer, which will be necessary, a part of the general system eventually to be constructed.

I enclose herewith a copy of the chemist's report on a sample of water representing your present supply, collected by your health officer, Dr. Hershberger, on September 25, 1894. You may reasonably expect that the new supply will be of the same character.

Respectfully,

C. O. PROBST, M. D., *Secretary.*

REPORT ON ADDITIONAL WATER SUPPLY FOR LIMA.

MR. PRESIDENT AND GENTLEMEN: Your committee visited the wells drilled by the Lima trustees for an additional water supply, on August 16, 1894. These wells are situated on a tract of land containing forty-five acres, owned by the city and are about one mile from the pump station that delivers the water into the city mains. The nearest building is a farm house about 600 feet from the wells. No other buildings are near.

The wells, five in number, are situated within a radius of seventy-five feet, and are so connected that a single pump delivers the water at the intake of the upper or receiving reservoir.

Well No. 1 is 118 feet deep.
Well No. 2 is 150 feet deep.
Well No. 3 is 133 feet deep.
Well No. 4 is 180 feet deep.
Well No. 5 is 140 feet deep.

These wells are drilled through eighteen inches of clay, eight feet of quick-sand, four inches of blue clay, and about six feet of gravel, when the rock lime-stone is struck at a depth of sixteen feet. The balance of the depth is in lime-stone.

The capacity of these wells is 750,000 gallons per day. It is estimated by the trustees that eight wells would supply the city, the consumption of which is 1,000,000 gallons per day.

The following is the sanitary analysis of this water by Professor Howard:

COLUMBUS, O., *October* 8, 1894.

DR. C. O. PROBST, *Secretary Ohio State Board of Health, City:*

DEAR SIR: I have examined the sample of water received from Lima, with the following results:

Parts per 100,000.

Oxygen required.	Free ammonia.	Albuminoid ammonia.	Nitrous acid.	Nitric acid.	Chlorine.	Total solids.
.20	.030	.010	.001	.250	1.40	112.8

The free ammonia in this water is so high that it would nearly condemn the water were it not that the other constituents are so low that, taken in connection with the fact that the wells range in depth from 118 to 180 feet, I am inclined to regard this as due to the reduction of nitrates, and that consequently, no unfavorable opinion can be drawn from the high free ammonia. For some reason the oxygen required is some higher than will be found in a deep well water of best quality, also the albuminoid ammonia might be expected to be a little lower if the water were of the highest degree of purity. Doubtless the chlorine (as common salt), accompanies the mineral constituents of the water and does not suggest contamination. No unfavorable opinion can be drawn from the quantities of nitrous and nitric acids present. The large quantity of solids (67.6 grains per gallon), show that the water is quite hard, as is so frequently found in deep well waters. While it would be better if the water were softer, and while the sample does not appear to be of the highest degree of purity, yet the water may be regarded as satisfactory for potable use.

Yours truly,

(Signed) CURTIS C. HOWARD.

The water from these wells, though quite hard, is an improvement on the present supply, loaded as it is with organic matter. The city is indeed fortunate in finding such an abundant supply of water from deep wells and so accessible to the city.

We would therefore recommend the approval of these wells as an additional supply, and we believe it would be a better and safer permanent supply than the surface water now in use.

(Signed) R. D. KAHLE,
E. T. NELSON.

REPORT ON WATER SUPPLY OF LOUISVILLE.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, *Columbus, O., November* 1, 1894.

To the Council of Louisville, Ohio:

GENTLEMEN: Plans for the water supply for your village were submitted to the State Board of Health October 25, 1894, by your consulting engineer, Mr. L. E. Chapin. The plans were approved by the Board subject to a favorable report upon chemical examination of the proposed supply.

Samples were collected from the wells from which it is proposed to supply your village with water, on October 26, and were submitted to Prof. C. C. Howard, of Columbus, Ohio. I enclose herewith a copy of his report, and beg to inform you that the proposed water supply for your village is hereby approved.

Yours truly,

(Signed) C. O. PROBST, *Secretary.*

CHEMICAL EXAMINATION.

COLUMBUS, OHIO, *October* 30, 1894.

DR. C. O. PROBST, *Secretary State Board of Health:*

DEAR SIR: I have examined the samples of water received from Louisville, O., with the following results:

No. 1. Sample, drilled well, 120 feet deep.
No. 2. Sample, " " 110 " "

Parts per 100,000.

No.	Oxygen required.	Free ammonia.	Albuminoid ammonia.	Nitrous acid.	Nitric acid.	Chlorine.	Total solids.
1.	.08	.017	.008	none	.014	.16	29.0
2.	.06	.010	.006	none	.021	.14	26.0

It will be noted that all the constituents in both these samples are quite low, with the exception of the free ammonia. I am informed that the water is from a deep well, and noting this fact as well as the very small quantity of all other constituents, I believe that no exception can be taken to this rather large quantity of free ammonia. It will be noted that all the quantities, with the exception of the nitric acid, are lower in the second sample than in the first. I have your explanation of the relations between the two waters and can only remark that the water with which the first sample is mixed to form the second must be a water of very fair quality. The constituents of both samples are so low that each must be pronounced a good water.

Yours truly,

(Signed) CURTIS C. HOWARD.

REPORT OF AN EXAMINATION OF THE PROBLEMS INVOLVED IN THE SELECTION OF A WATER SUPPLY FOR NAPOLEON.

BY EDWARD T. NELSON, COMMITTEE.

At the request of the mayor of the city, and on the information that the contracts for a public water supply were about to be let, I visited Napoleon, Ohio, on the 24th of July, 1894. Very fortunately for me, Mr. J. R. Strawn, of Salem, Ohio, the engineer of the proposed water works, and one of the best known of our sanitary engineers, was in the city at the time. I desire at the outset to record my thanks to Mr. Strawn for his great kindness in showing me the plans, elevations and detailed drawings, but more especially for his efforts in showing me all points of interest in connection with the location of the intake pipes and the possible sources of danger to the water supply.

Napoleon, the county seat of Henry county, is located on the northern bank of the Maumee river, and on the line of the Miami and Erie canal. The site of the town is sufficiently elevated above the river valley to afford good drainage. The streets are broad and well kept, and the aspect of the place is one of general thrift and improvement. The Maumee river is from 650 to 700 feet wide at this point, and has a depth of water ranging to 12 feet. To a limited extent, the water must be termed "slack water" owing to a dam fourteen miles further down the river, in the direction of Toledo. There is a strong surface current, but it is probable that the great depth of the water in the channel at all seasons of the year is owing to the influence of the dam. One thing in regard to the situation at Napoleon must be described in order that the members of the Board may gain an understanding of the questions involved. The canal lies at the foot of the slight elevation upon which the town is ocated and between the town and the river. The canal thus receives the entire surface drainage of the town, and also, to-day whatever sewage here is, with a very slight exception to be noted further on in this report. It may be remarked in passing, that the drainage between the canal and the river is also partly back into the canal. The intake pipe will be located above the town, and is to be carried out into the river about 225 feet, to a point where there will be not less than ten to twelve feet of water at the lowest possible stage of the river in midsummer. The pipe to be used is 14-inch. It will be carried in a trench under the canal to the pump-house just north of the canal bed.

The current, at this point in the river, seems stronger than at any other within reach, and the bed is a pure sand, sharp and clean, without the

slightest admixture of mud or other surface deposit. The supply of sand for builders and plasterers is taken from the bed of the river not far from the proposed location of the intake pipe. Above the proposed site for the works, there is nothing but agricultural lands for many miles, the nearest town being Defiance, which is more than twenty miles as measured by the river. As water supplies go in Ohio, this one must be regarded as far above the average in purity of the water, and in the absence of any visible contamination. Defiance on the one side, and Toledo on the other, both obtain their water from the Maumee. A very short distance below the location of the pumping house, there is a natural ravine or small water course. It is carried under the canal in a pipe perhaps fifteen inches in diameter, and the water carried by it enters the river at a point at least 300 feet below the mouth of the intake pipe. At present very little water passes down the ravine—none at the time of our visit—but there are already a very few house connections, and there may be more in the near future, if measures are not made at once to stop the danger. Another remarkable feature of the situation must be described. Just opposite the town, but a quarter of a mile below the water works, a number of manufacturing establishments are run by water obtained from the canal, the waste water flowing then into the river. Among those seen and examined are the following: Two flouring mills, a woolen mill and a saw mill. With the exception of the woolen mill, these establishments pass the water from the canal over the wheels and on into the river exactly in the same condition in which it left the canal. The woolen mill adds certain wastes in the form of dyes and the washings of their material. At all these places the surface current was so strong that bran, coloring matter and sawdust were taken at once down the stream before they had time to settle to the bottom. At the foot of the main street of Napoleon there is a brewery planted on the bank of the river. Connected with it there is a stable giving shelter to six or eight horses at all times. The manure from this stable is thrown out of a window down on the bank of the river and then into the water. The brewery company, by means of pipe and pump, obtains a supply of water from the river at the foot of the manure pile. I was informed by a number of citizens, that the water thus obtained is not used in the manufacture of beer, but only for washing out the kegs and barrels. I called upon the members of town council as far as they could be found, and also upon the trustees of the water works. I found them, without exception, interested in the questions that brought me to Napoleon, and apparently willing to meet all my suggestions in the spirit in which they were made. This is even more especially true of the mayor, Honorable Mr. Meekison. We discussed methods for protecting the water now flowing in the river, and improving it by all the power

possessed by a town of this size. It is to be hoped that an ordinance will be passed by the council at an early date in regard to the location and outlet of all future house drains and sewers; as also one in regard to the contamination of the water in the river below the location of the water works. The health officer was sent on a visit of inspection to the brewery before I left the place. After thus visiting and examining the river both above and below town, I feel warranted by the facts in offering the following resolution:

Resolved, That the State Board of Health hereby approves the plans of the water works trustees of Napoleon, and also their plan of obtaining a public water from the Maumee river at the point shown upon the plans submitted.

REPORT ON PROPOSED WATER SUPPLY FOR WOOSTER.

OHIO STATE BOARD OF HEALTH,
OFFICE OF SECRETARY, COLUMBUS, O., *October* 31, 1894.

DR. JAMES D. BEER, *Chairman Water Extension Commission, Wooster, Ohio:*

DEAR SIR: On the 27th of October, at your request, and following instructions of the State Board of Health, I visited your city and investigated its present and proposed public water supply, and respectfully submit the following report:

The present supply is both inadequate and undesirable. From the character of the surrounding soil and the presence of leaching cess-pools in its vicinity, there is reason to fear dangerous pollution of the water in the large well. The water collected by your impounding reservoir is not of the best character, and this supply almost entirely fails in time of drought. But there is probably little question in the minds of your citizens that a new and additional water supply must be provided at once, and the only point to be settled is, where shall this be obtained.

First, I desire to express the opinion that if a fairly pure water, at a reasonable cost, can be obtained in sufficient quantity to supply all present and probable future needs of your city, the present source of supply should be entirely abandoned.

I was shown by your commission two possible sources of supply; one from a mill race fed by Apple creek, and the other from wells in the Killbuck valley, on what is known as the Eicher place. There can be no hesitation in deciding between these two supplies if health interests alone are to be considered. And even from a financial standpoint, while the cost of introducing the former supply may be less than that of the latter, it is always cheapest in the end to obtain the purest supply possible.

The creek water is subject to pollution through miles of country which it would be impossible for you to protect. The epidemic of typhoid fever at Plymouth, Pa., teaches us that even with pure mountain streams an open water supply is not always safe. The proposed supply from wells on the Eicher place is free from any present danger of pollution, and may be kept so by proper attention to surroundings. I feel, therefore, that I can safely recommend this as a source of water supply for your city, *provided it can be made to yield a sufficient quantity.* While there is considerable evidence to show that an abundant supply can be obtained from this source, this should be proved conclusively before extensive work is begun.

The question as to whether a better or more available supply than either of those proposed could be found, has not been considered, as your commission carefully looked into that matter.

A sample of water was taken from the head race at Phillip's mill on October 27, 1894. This was labeled sample No. 1. A sample was also taken from a test well, known as well No. 7, on the Eicher place at noon of the same day. This was marked sample No. 2. These were submitted to Prof. C. C. Howard, of Columbus, Ohio, for chemical examination. Prof. Howard has made the following report:

October 30, 1894.

DR. C. O. PROBST, *Secretary State Board of Health:*

DEAR SIR: I have made a sanitary analysis of the samples of water received from Wooster, with the following result:

Parts per 100,000.

No.	Oxygen required.	Free ammonia.	Albuminoid ammonia.	Nitrous acid.	Nitric acid.	Chlorine.	Total solids.
1.	.34	.001	.018	trace	.035	.36	27.7
2.	.06	.001	.005	trace	.015	.20	18.6

In sample 1 the oxygen required and albuminoid ammonia are decidedly higher than will be found in a water of good quality, and these factors are of sufficient importance to regard the water as not a desirable one. In sample 2 it will be observed that all the constituents except free ammonia and nitrous acid, which are the same, are less than in sample 1. These are so low that the water is shown to be of very good quality.

Yours truly,

(Signed) CURTIS C. HOWARD.

It will be seen that the evidence from a chemical examination bears out the evidence of inspection as regards the comparative purity of the two proposed supplies, and warrents condemnation of the creek water and approval of the well water.

Very respectfully,

(Signed) C. O. PROBST, *Secretary.*

REPORT OF AN INVESTIGATION OF A NUISANCE AT ALLIANCE.

BY THE SECRETARY.

The following petition from Alliance, the original returned at the request of petitioners, was received in July:

To the State Board of Health:

GENTLEMEN: The undersigned are residents of the city of Alliance, Ohio, and respectfully represent to your honorable body that there is constructed in said city of Alliance a stone drain beginning at a point south of East Market street, and at Mechanic avenue, and running thence to a point north of East Prospect street and west of Arch avenue, where it empties into an open stream which runs in a northerly direction through a portion of said city of Alliance, which is thickly settled with resident families.

This stone drain is used by property owners along its course as an outlet for drainage and for the sewerage of waste pipes, water closets and excreta in general.

The result of this use of said drain is that at its mouth and along the course of the open stream running thence, there is a deposit of filth and slime and excreta that in warm weather gives rise to foul vapors, noxious gases and stench which is inimical to the health and comfort of those who reside along said open stream, and which is dangerous to the general health of those residing in that portion of said city, and is a nuisance which should be at once abated.

Your petitioners further represent that the local board of health, and also the city council, have been appealed to for action in this matter, but have utterly neglected and failed to take steps to prosecute any reform, and said stream is now beginning to give forth foul vapors and is a source of danger to the health and lives of those residing in its vicinity, and it should have immediate attention, which the council of said city of Alliance and the local board of health neglect and refuse to give.

Your petitioners therefore pray that your body take such steps as may be necessary to protect them from the danger to their lives and health.

(Signed)

Alex. Scott,	Jas. H. Scott,
A. B. Marshall,	Jas. A. Parks,
A. L. McDonald,	Chas. W. Hourson,
H. Hahn,	A. B. Shilling,
F. Lindesmith,	James Kelly,
James Hopper,	L. W. Johnson,
S. McDonald,	Jos. Miller,
G. McDonald,	F. E. Hartzell,
F. Fisher,	Luther Lee Johnson, M. D.,
N. S. Kayler,	H. H. Shafer, M. D.,
J. E. Fletcher,	P. C. Ramsey, M. D.,
D. E. Anderson,	P. J. Callahan, M. D.,
W. W. Laiabs,	S. T. Keith, M. D.,
A. Weaver,	J. H. Tressel, M. D.,
John V. Lewis, M. D.	

I went to Alliance July 9, and in company with Dr. Welker, who is health officer, Mr. Hartzell, one of the petitioners, and Mr. Sharer, examined the nuisance complained of. The statements of the petitioners were well within the facts, as the run was in a very filthy condition.

The health officer stated that their board of health was fully aware of the nuisance and the need for its abatement, but called attention to the fact that the city was at the time engaged in constructing a system of sewerage, part of which was already built, and that the sewage now entering the run would soon be taken care of. As sewerage is the only proper way of removing the nuisance it seemed unreasonable on the part of the petitioners to expect council to go to the expense of covering over the run, as was proposed, or to compel property owners to adopt temporary expedients to care for house drainage, when they were being assessed for sewers which would permanently dispose of such matter.

To this Mr Hartzell replied that the work was progressing so slowly that it would likely be a year or more before the nuisance would be abated.

The outfall sewer had already been constructed. This discharges into Mahoning river about the Walnut street bridge. The plans, however, call for the extension of this sewer some distance to the north, discharging into the same river.

On July 12, I wrote to the mayor and council of Alliance, calling attention to the law requiring them to submit the outlet of their sewerage

system to the State Board of Health for approval. No reply was received to this communication. A letter was received from Mr. L. E. Chapin, consulting engineer, under date of October 3, in which he has the following to say in regard to the situation at Alliance.

"Another matter I wish to consider with you, is the matter of the sewerage plans and the disposal of sewage in the city of Alliance, Stark county. The general plans of the sewers were prepared and adopted by the council before the passage of the act rightly giving your Board the authority to pass upon such plans. I have recommended, since the passage of that act, that the town council submit to your board their plans for approval or such recommendations as the State Board thought desirable, but the town council, like other municipal bodies, is slow to incur an expense which may be avoided or deferred.

"Some eight or ten sewers have already been constructed in accordance with the general sewer plans, which provide for a strictly sanitary system of sewers. The outfall sewer temporarily discharging into the Mahoning river at a point above the Walnut street bridge. The plans, however, call for the extension of this sewer some fifteen hundred feet further to the north, to an outfall in the Mahoning river at a point remote from any residence. This outfall sewer is also carried at such an elevation above low water in the river that purification works can be built on the lands adjacent to the outfall.

"The city of Alliance, in addition to this sanitary system of sewers now started, has several storm water sewers; one in particular which has a number of house connections, and the flow of which during certain seasons of the year is extremely objectionable, being a decided nuisance.

"The council had passed an ordinance and were in shape to enforce it; that is, as soon as the sanitary sewers were built along the property now sewered into the storm water sewers the connection to the storm water sewers should be cut off and the drainage of these properties be connected with the sanitary sewers, thus eliminating the nuisance from these objectionable sewer connections.

"It has been the idea of the council that in the near future purification works for their sewage must be erected, inasmuch as they must drain into the Mahoning river, from which is largely dependent the water supplies of various towns and cities in that valley. But certain parties have commenced proceedings and secured a temporary injunction restraining the city, first from allowing any sewage to enter the above mentioned storm water sewers; and second to restrain the corporation from discharging any sewage into the river through the sanitary sewers.

"These sanitary sewers having been built by the issuance of bonds to be met by an assessment upon the property benefited by the improvement, it leaves the city in bad shape, inasmuch as they can not spread an assessment upon the properties for the cost and expense of constructing the sewers until the sewers can be used. Now the amount of sewage from the sanitary sewers for the next year will be very small, as there are but few connections now made with the system, and few will be made until next season. Therefore the question with me is, 'What steps can the council take under the statutes and circumstances, whereby they can derive the benefit from this much needed system of sewers?"

Several of the officials are of the opinion that if the State Board of Health would take some action in the matter and make a recommendation to the town council, that the council could bring the matter of issuing bonds for the construction of a sewage purification works before the people at the November election, and that such a question might be carried. Can your Board consistently make a recommendation to the council regarding the disposal of sewage, which recommendation could be published and thereby used as a means of convincing the people and electors of the necessity of such action?"

In reply I stated that the council of Alliance had already been notified that this Board was prepared to take action with respect to the sewerage system of Alliance, upon request from the proper authorities. The matter rests there.

REPORT ON AN ALLEGED NUISANCE AT ARLINGTON HEIGHTS.

BY DR. BYRON STANTON, MEMBER OF STATE BOARD OF HEALTH.

To the State Board of Health:

GENTLEMEN: Having been appointed by President Nelson, on May 5, 1894, to make an investigation of a reported nuisance at Arlington Heights caused by The George Fox Starch Works at Lockland, I would respectfully report that on the 9th of May, in company with John H. Francis, health officer of Arlington Heights, I visited the starch works and found a small amount of waste from the works running into the stream which flows through Arlington Heights.

As the amount of waste was small and the stream not very low, I was not able to detect any serious nuisance. Suggesting that my report to the Board should not be made until I had further opportunity to investigate the matter and requesting the health officer to notify me of further trouble from this source, the matter was held in obeyance.

Having heard nothing further from the health officer, I called upon him in August and was informed that there had been no further cause for complaint. No further action, therefore, is necessary by this Board under existing state of affairs.

Respectfully submitted.

B. STANTON, *M. D.*

REPORT OF AN INVESTIGATION OF AN ALLEGED NUISANCE AT BELLEFONTAINE.

BY THE SECRETARY.

Early in July complaint was received from Bellefontaine that a sewerage system was being constructed for Bellefontaine, and that it was proposed to discharge the sewage into a run which flows through the village. It was further alleged that this run was already receiving a large amount of sewage and other filth, and was the source of a nuisance detrimental to the health and comfort of a large number of people.

Thinking from the reports that this was a case for the State Board to deal with, the President and myself went to Bellefontaine on July 28. We found that the situation had been, in part, misrepresented. The village was not about to construct a sewerage system, although a nuisance had undoubtedly been created by the pollution of the run. This run, known as Possum run, passes through the village in a southwesterly direction, and is receiving a large amount of filthy drainage. It is a natural water course, serving to carry off a good part of the surface drain-

age of the town; but it has been converted into an open sewer. Numerous privies are built over it, and a number of house drains open into it, including the water closet drainage from the court house and jail. Towards its lower end it also receives a considerable amount of drainage from the gas works, which further corrupts it.

In the central part of town the run has been arched over. At the time we saw it there was practically no water in it excepting what entered from drains and sewers.

We inspected the run for its entire length in the village, being accompanied by the health officer, members of the board of health and several interested citizens. We afterwards met the board of health and discussed measures for abating the nuisance. The board of health had adopted an order to exclude all filthy drainage from the run, but it seemed doubtful whether this order would or could be enforced. The only radical cure for the trouble is a comprehensive system of sewerage, and the board of health was urged to use every effort to secure this needed improvement.

The town is supplied with excellent artesian water and will probably soon be driven to the construction of sewerage.

REPORT OF AN INVESTIGATION OF A NUISANCE AT VINTON.

BY THE SECRETARY.

August 23, I was summoned to Vinton, Gallia county, by the board of health. The board wanted advice in regard to enforcing its order to abate a nuisance.

The facts in the case are as follows: Mr. S. owns a dam on Raccoon creek which furnishes, in part, power to run a flour mill, woolen mill and planing mill, combined. Many years ago this creek made for itself a new channel, leaving a loop of its old bed cut off from its flow. This loop receives drainage from adjacent highland, and in addition is subject to overflow from the creek during freshets. As a result, two large stagnant ponds have been created and maintained in the village. A large amount of decaying vegetable matter is gradually uncovered as the water is lowered by evaporation, and the board of health was of the opinion that this was the cause of malarial fever prevailing in the village. The prolonged drought of this year caused the water in one of these ponds to become almost completely evaporated; considerable remaining in the other.

The board of health ordered the owner of the dam, who also owns the land on which the ponds are located, to abate the nuisance by cutting

a channel between the creek and the ponds above the dam, so that the water in the ponds could be freshened. The order had not been obeyed, and the owner threatened to contest it in the courts.

In company with the mayor, members of the board of health, Mr. S. and others, I examined the bayou, as it is called. The conditions were as described above. No bad odors were noticeable. I questioned the physicians, and others, with reference to the prevalence of malarial fever in the village. The mayor, Dr. Dutton, who is a member of the board of health, and several citizens agreed in the statement that fully four-fifths of the inhabitants were suffering, or had recently suffered from malaria. Three or four were said to be in bed with the disease, and I found a number who testified to knowing of those who were having the "shakes" or intermittent fever. Drs. Hamilton, however, (who are, by the way, related to Mr. S.) said there was not much malarial trouble in the village; at least no cases of pernicious fever. Malaria has undoubtedly prevailed in the village for years, and in my judgment the bayou is largely responsible for it. I doubt very much whether the plan proposed by the board of health will stop the trouble. The daily lowering of the water in the dam will cause areas in the bayou, covered by decaying vegetation, to be daily uncovered and exposed to the sun; conditions favorable for the development of malaria.

The plan for abating the nuisance was a compromise measure. Some of the board favored drainage by tiling the bayou, but the owner claimed this would destroy his dam, as the winter freshets would cut a channel through the bayou and leave his dam without water, and the board were fearful that the corporation, if this should result, would have heavy damages to pay.

I advised the board to proceed in the enforcement of its order; to get the opinion of a competent engineer as to the danger of destroying the dam by draining the bayou, and if the nuisance was not abated by freshening its waters, as proposed, to amend their order and require the owner to drain the bayou.

I then called upon Mr. S., owner of the dam and bayou, and talked the matter over with him. He claimed that the order was in the nature of spite work on the part of certain members of the board of health. I assured him that in my opinion the bayou was accountable for the malaria which prevailed in the village, and that the board had authority to compel him to abate the nuisance. He said he would consult his attorney, and would carry out the board's order unless advised not to do so.

The clerk of the board of health, Mr. E. G. Shaner, under date of October 12, reported that nothing had been done by the board, and that they were still having cases of malarial fever.

The owner of the dam consulted an attorney, who advised him to resist the order on the ground that the board of health was not legally organized, there having been but four out of six councilmen present when the board was established. Also because the village did not have five hundred inhabitants. I consulted the Attorney General, who advised that these objections were without grounds, as four of six councilmen are competent to pass ordinances. The limitation as to population was removed by the amendments to the health laws, passed March 4, 1893. I notified the Vinton board of the Attorney General's decision and advised them to proceed with the prosecution.

REPORT ON A NUISANCE AT WOODSFIELD.

BY THE SECRETARY.

I was called to Woodsfield, Monroe county, by the mayor, on a mission very similar to that which took me to Uhrichsville, namely, the members of the board were not sure as to their powers and duties, and some questions had arisen, in the settlement of which they required help.

After inspecting the village in company with the mayor, Mr. Walton, and the health officer, Dr. Huth, I met the board of health.

The storage of fertilizer-bone-dust within the corporation was one of the questions troubling the board. Woodsfield is a distributing point for quite a good deal of this material, and some of the principal business men are engaged in it. It is stored in half a dozen small wooden houses, located on railroad property near the railroad depot. The odor from these houses is intolerable to a number of families living in their vicinity. The board had ordered the removal of these houses, but the order was not obeyed.

I advised the board that the houses did not constitute a nuisance, but the fertilizer stored in them, and that their order should be amended to prohibit the storing of fertilizer at the places named, and to follow up this order, if not obeyed, by the arrest of persons failing to comply.

The other question the board had not been able to settle was a nuisance arising from the disposal of excreta at the court house. A year or more ago the commissioners introduced the Smead dry closet into the court house. There is only the dry closet feature of the Smead system, the building being heated and ventilated by other means. The court

room is an exception, it being ventilated by connecting it with the ventilating stack.

This system of excreta disposal has caused such annoyance to the people living near the court house, arising from bad odors which have been noticed squares away, that the board of health ordered the commissioners to remove it. This had not been done. Only on one or two occasions were bad odors noticeable in the court house itself.

Several factors seemed to enter into the cause of the trouble:

1st. The system is over-taxed. The closets, being very convenient, are used by a large number of the town people.

2d. The excreta have been allowed to accumulate, and in burning out a mass of fecal matter with slow fire great volumes of noxious gases were created, and, in certain conditions of the atmosphere, settled down upon the town.

3d. The ventilating stack is but sixty-two feet high, and the cupola of the court house is ninety feet, so the gases are discharged too near the ground.

4th. In operating the closet excreta are received on fire brick kept red hot by a gas jet beneath, for the purpose of drying the deposit.

It was decided to try running the closets without heat, except in the ventilating stack, and to burn the deposits at short intervals with the aid of kerosene. If this was not successful, Mr. Smead was to be requested to attempt to remedy the matter. If the nuisance still continued to exist, in spite of all changes in operation or construction, the board of health was advised to enforce its order for the removal of the apparatus.

CONSUMPTION AND ITS PREVENTION.

BY THE SECRETARY.

Although it has been fully twelve years since Koch announced that he had discoverd the cause of consumption to be a vegetable parasite, which at once suggested the possibility of its prevention, it is only within the last year or two that health authorities of this country have taken active measures to restrict the ravages of this monster plague.

While the medical world has accepted the parasitic origin of consumption, and also the fact that the disease may be, and usually is, indirectly communicated from one person to another, and is therefore preventable, the great masses of the people do not yet realize this. It is not believable that a disease which may be prevented, and which destroys one-seventh

... year 1880, and about one-seventh of all deaths are

The following table, made up from reports publis
ics, shows the number of deaths reported annually
umption and other tubercular diseases during the ten

DEATHS FROM TUBERCULOSIS IN OHIO FOR TEN YEARS, 1884-93.

Year.	Phthisis.		Tub. diseases.		Total deaths.		Per cent. of total deaths from phthisis.		Per cent. of total deaths from tuber. dis.	
	Male.	*Female.*	*Male.*	*Female.*	*Male.*	*Female.*	*Male.*	*Female.*	*Male.*	*Female.*
*1884	1,513	1,913	1,771	2,158	12,898	11,466	11.7	16.7	13.7	18.8
†1885	1,694	2,033	2,838	1,189	13,522	12,586	12.5	16.1	13.6	17.4
†1886	1,727	2,114	1,887	2,253	12,874	11,574	13.4	18.3	14.6	19.4
*1887	1,798	2,249	2,042	2,474	15,460	14,416	11.6	15.6	13.2	17.1
*1888	1,771	1,773	2,044	2,478	16,514	15,113	10.7	11.1	12.4	16.4
*1889	1,711	2,042	2,039	2,351	16,410	15,046	10.4	13.6	12.4	15.6
*1890	1,614	2,044	1,811	2,429	17,135	15,304	9.4	13.3	10.5	15.9
*1891	1,664	1,992	1,928	2,249	17,535	15,562	9.5	12.8	10.9	14.4
*1892	1,543	1,970	1,768	2,181	19,528	17,469	7.9	11.3	9.1	12.5
*1893	1,486	1,794	1,672	2,000	17,417	15,566	8.6	15.5	9.6	12.9
First five years	8,503	10,082	9,582	11,552	71,268	65,155	11.2	15.5	10.9	17.7
Second five years	8,018	9,852	9,218	11,210	88,025	78,947	9.7	12.5	12.9	15.4
Totals	16,511	19,934	18,800	22,762	159,293	144,102	10.4	13.9	11.8	16.4

*Hamilton county excluded. †Cuyahoga and Hamilton counties excluded. Years ending March 31.

A much greater number of deaths occurred than is expressed in the table, and it is safe to say that more than 50,000 persons died in Ohio from consumption during the ten years ending with 1893.

The State Board of Health, during the present year, has devoted itself to the task of disseminating information concerning the contagious nature of consumption, and the means to be employed to limit its spread. First, the medical profession was appealed to for assistance in the following circular letter, which was sent to each physician in Ohio:

OHIO STATE BOARD OF HEALTH,
SECRETARY'S OFFICE, COLUMBUS, O., *March* 12, 1894.

DEAR SIR: The State Board of Health desires to inquire into the extent of phthisis pulmonalis in Ohio, with the view of taking some action to limit, if possible, its extension. As the required information can only be obtained from practicing physicians, and as their assistance is essential for the success of any effort made for the prevention of the disease, we hope to secure your cordial co-operation in this undertaking.

Experiments in tuberculizing the lower animals show conclusively that for *animals* the disease is both inoculable and infectious; and there is evidence, both clinical and experimental, sustaining the view that tuberculosis is also communicable from man to man, and from animal to man. While heredity, bad sanitary surroundings and other adverse conditions of environment undoubtedly play an important part in its development, it may be asserted that tuberculosis never occurs in the absence of the specific bacillus.

Dr. Billings states that 101,645 deaths were reported from consumption in the United States during the census year 1890, and estimates that the correct figure is not less than 125,000. No figures are given for the deaths from other forms of tuberculosis. In Ohio, for the year ending March 31, 1891, assessors reported 3,650 deaths from consumption. Assuming that the omissions in reports of deaths from consumption in Ohio are in proportion to the omisssons in reports of deaths from all causes, we must add not less than 2,000 additional deaths due to this cause.

What can be done by the health authorities and attending physicians to stay the progress of this great plague?

As it is estimated that for one that dies of consumption two will be sick, it may appear a well nigh hopeless task to control this army of invalids, and the most that can be expected is that a continued and systematic effort will prevent a certain, we hope a considerable, number of new cases each year. There are but few consumptives who do not come under the eye of a physician, and if each patient can be imbued with the idea that his disease may be communicated to others, and especially to his loved ones, and that this can be prevented by proper care, much will have been accomplished. As the bacilli of pulmonary tuberculosis are practically found exclusively in their sputa, it is unnecessary to place restrictions upon the movements of consumptives if they can be induced to properly care for and destroy these infectious sputa. While this may not be possible in all cases, it is believed that an effort to this end will result in much good.

In the line of education the State Board of Health could prepare a pamphlet on The Prevention of Consumption, couched in simple language, enforcing the fact of the communicability of the disease, and giving plain instructions for caring for the sputa, and for necessary disinfection of rooms, soiled clothing, cuspidors, etc. Copies of the pamphlet could be furnished to physicians, enabling them, if desired, to leave proper instructions with the family in printed form. The pamphlets could also be supplied to each board of health in the State (there are now such boards in all cities and in nearly all villages and townships), with instructions to place copies in all families in which the disease is reported.

To accomplish this it would be necessary for physicians to report all cases of consumption to the local health authorities.

Although there may be some objections urged against the registration of consumptives, it is believed that such a measure will afford the best opportunity for controlling the disease. While boards of health will not be expected to use compulsory measures in the prevention of consumption, they are clothed with authority which enables them to do so in exceptional cases; as for instance, upon the request of the attending physician, requiring the disinfection of a house in which a death has occurred from this disease before it is occupied by another family. Boards of health would also be able to provide the poor with necessary disinfectants, where disinfection would likely be omitted on account of the expense. Many other ways would doubtless appear, if cases of consumption were reported, in which the attending physician and health authorities could work together for the prevention of other cases of the disease.

It may also be considered wise to distribute a pamphlet to managers of railroads and factories, to proprietors of hotels, theaters and other places of public resort, urging that proper precautionary measures be taken to protect the public against tubercular infection.

If consumption is communicable from person to person, it is preventable; and if the public can be brought to a realization of this fact we may hope that the law of self-preservation will interpose a check to this, the greatest scourge of mankind.

The medical profession has always been foremost in all matters of sanitary reform, and we hope for your advice and assistance in this proposed measure against consumption.

Please fill out the enclosed blank and return it to this office as soon as convenient.

By order of the Board.

Yours respectfully,

C. O. PROBST, M. D., *Secretary.*

(BLANK.)

1. How many cases of consumption are you treating at the present time?

2. How many cases did you treat during the year 1893?

3. Do you think it would be advisable for physicians to be required to report to the local health authorities all cases of consumption coming under their care?

4. Do you believe that objections would be urged against such reports, and if so, what?

5. If supplied with printed instructions for the prevention of consumption, suitable for the laity, will you be willing to leave a copy with each family into which you are called on account of consumption?

6. What suggestions have you to offer as regards *practical* measures to be taken for the prevention of consumption?

7. Please give a brief history of any case or cases occurring under your observation, showing consumption to be a communicable disease.

Name..... ....., M. D.

Residence ...., Ohio.

Date..... ....., 1894.

Eleven hundred and eighty-two answers were received, representing nearly one-sixth of the entire profession. With but few exceptions this

number have pledged themselves to aid the Board in any effort it may make to prevent the spread of this disease. In addition to the answers to the inquiry, a number of letters have been received from physicians, expressing themselves as heartily in favor of such a movement.

Analyzing the reports it is found that eleven hundred and eighty-two physicians, were, at the time of the inquiry, treating nineteen hundred and twelve (1,912) cases of consumption. Assuming this to be the average for the entire profession, it indicates that between ten and eleven thousand consumptives are continuously under treatment in this State. Fifty-three hundred and forty-two (5,342) cases are reported as having been under treatment during the year of 1893. As many of these cases were doubtless seen by more than one physician during the year it would be misleading to multiply this by six, as in the previous estimate, but even allowing that each case was seen by two physicians, and so reported twice, we have an estimate of over sixteen thousand (16,000) consumptive patients treated during the year 1893.

The majority—764—favor requiring physicians to report cases of consumption to the local health authorities; but nearly as many—668—are of the opinion that objections would be urged against this requirement. Various objections are mentioned:

(*a.*) Depressing effect upon the patient.

(*b.*) Branding a family as tuberculous and lessening chances of other members to enter matrimony.

(*c.*) Physicians who were known to always report their cases would not be called into many families where consumption was suspicioned.

(*d.*) Physicians would wait too long in diagnosing diseases, endangering friends and relatives in the meantime.

(*e.*) Unless isolation of patient was intended, of no particular use.

Many other objections were mentioned.

All but fifty-eight of the eleven hundred and eighty-two physicians reporting expressed a willingness to place printed instructions for the prevention of consumption, as prepared by the Board, in the families into which they were called on account of consumption. This is most gratifying, and an indication of the direction our efforts should take. Four hundred and seventy-seven furnished reports of cases showing the communicability of the disease, and this is one of the most valuable results of the inquiry. These reports afford the most convincing evidence that consumption is a contagious disease; and that without proper precautions every patient is a source of danger to those about him.

The information received by the inquiry may be briefly set forth as follows:

Number of answers received to circular sent to each physician in Ohio...	1,182
Number of cases treated during the year of 1893	5,342
" being treated at present time	1,912
Number of physicians who favor reporting all cases of consumption to the local board of health	764
Number who believe objections would be raised to such reports	668
Number unwilling to leave instructions, if provided	58
Number who believe consumption to be a communicable disease	640
Number giving cases showing that it is communicable	477
Number of cases given showing the communication of consumption from husband to wife	116
Number of cases given showing the communication of consumption from wife to husband	87
Number of cases given showing the communication of consumption to nurse, relative or friend	274
Number of physicians who believe the disease to be communicable, but do not give examples	127
Number of physicians who believe the disease to be hereditary	38
Number of physicians who do not believe that consumption is communicable	36

The following is a list of cases, arranged alphabetically as to residence, showing the contagiousness of consumption, reported to the State Board of Health by physicians of Ohio:

DISEASE TRANSMITTED BY HUSBAND TO WIFE.

Belle Centre, S. J. Pollock, M. D.

"I attended a man with consumption; his wife, a stout, healthy woman, of strong race, in a short time after his death succumbed to consumption."

Belle Centre, W. S. Philips, M. D.

"Husband died about four years ago. Since then the wife, of good history, is a victim of the disease."

Bellville, E. Stofer, M. D.

"A lady, previously in good health, nursed her husband who had tuberculosis, and apparently contracted the same disease. Died four months after his death."

Bridgewater, M. L. Holt, M. D.

"Mr. S., of strong and healthy parents, began to decline and died in about two years of consumption. Wife, of healthy parents, followed in two years of the same disease.

'Mr. G., of strong and healthy family, began to decline and died, and his wife followed in two or less years. Wife was of pulmonary diathesis.

'Mr. T., consumptive diathesis, died, and his wife, of healthy parents, followed in less than two years.

'Mr. P. came from the army in 1865 with consumption; of pulmonary diathesis, died in one year. Wife, of healthy family, died in two years of consumption."

Byhalia, E. L. Mather, M. D.

"A comsumptive married a perfectly healthy wife. No history of consumption in family. Wife nursed him and in a short time developed consumption and died of same."

Caledonia, C. Hahn, M. D.

"A young man of consumptive family married a girl in whose family there had never been anything like consumption, and in less than a year they both died of the disease."

Canton, E. O. Morrow, M. D.

"A strong, healthy woman, good family history, who slept with and nursed her husband during a six months' seige of consumption, died of the same disease within a year and a half after."

Canton, A. B. Walker, M. D.

"Miss R. married into a consumptive family, her family history being good. Her husband died two years after their marriage, of consumption, and in eighteen months she married again. Within two years and a half she died of the disease, and three years later her second husband died of the disease, with no history in his family of the disease."

Carey, John N. Kerr, M. D.

"Mrs. S., not of tubercular family, waited upon and slept with her husband who died of consumption. She now has pulmonary tuberculosis."

Cincinnati, Otto Juettner, M. D.

"N., daughter of healthy parents, married L., who a year after marriage developed symptoms of bacillary phthisis. At present the wife is under treatment for incipient tuberculosis."

Cincinnati, B. F. Lyle, M. D.

"No inherited tendency, husband died two years previously of consumption and was nursed by his wife, who contracted the disease."

Cincinnati, C. C. Moode, M. D.

"Have seen a healthy, robust girl marry a tuberculous man (chronic) and die from consumption before he died, and I have known of vice versa examples."

Cincinnati, A. F. Juettner, M. D.

"G. M. died of tuberculosis. His wife also died of tuberculosis after him. She coming from a very healthy and robust family."

Cleveland, G. O. Fraser, M. D.

"Mrs. B. attended her husband, was healthy and strong, but died from phthisis inside of a year. Could give many more cases that were so striking that my mind was settled on this point fifteen or twenty years ago."

Cleveland, J. B. McGee, M. D.

"Husband died of tuberculosis, and six weeks after the wife had typical symptoms, but in two months this all cleared up and she was discharged well. Whether she remained so, do not know."

Columbus, Starling Loving, M. D.

"A husband developed bronchial tuberculosis, was carefully nursed by the wife (in good health) for eight months, when he died. Six months afterward the wife had pneumonorghia and other symptoms of tuberculosis, and at the end of six months more died."

Columbus, Noah Elliott, M. D.

"A patient of mine contracted consumption. He was waited upon by his wife, a strong, healthy woman, but two years later she died of the same disease."

Columbus, R. Harvey Reed, M. D.

"A healthy wife nursed a consumptive husband. Husband died, and afterwards wife and child. All of consumption."

Columbus, J. U. Barnhill, M. D.

"J. E., belonging to a family free from tubercular affections, died of acute tuberculosis, and five or six months after his wife died of the same disease."

Dayton, A. M. Williamson, M. D.

"I remember a case of a gentleman dying of consumption, who was attended and nursed by his wife. Three years subsequently she died of consumption and I could not trace any heredity in her case."

East Liverpool, J. E. Toot, M. D.

"Mr. F., in whose family there was a history of consumption, married a lady whose history was clear. Both died of the disease."

Elyria, O. T. Maynard, M. D.

"Husband had consumption for two years. Wife came down with well developed phthisis before he died; previously good health and a clear family history. Another case, very similar, where wife came down with disease soon after husband's death."

Gillespieville, J. M. Wiltshire, M. D.

"I was called to treat a gentleman for acute tuberculosis. He died in a few months, leaving a wife and four children apparently in good health. One and another of them died, in quick succession, of the disease."

Hamilton, W. J. Kumler, M. D.

"Mr. T. died of consumption Mrs. T., who slept with her husband and was constantly with him, now has a well developed case. There was no trace of the disease in her family."

Harpersfield, L. L. Bennett, M. D.

"Husband died of consumption; later his wife died of same disease. Undoubtedly communicated."

Harrietsville, J. W. Brock, M. D.

"I recall one case where a husband communicated the disease to his wife, whose family history gave no indications of the disease."

Harrison, J. C. Kilgour, M. D.

"A wife whose husband died with the disease followed him in the same way, three years later, with no history of the disease in her family."

Hebron, LeRoy W. LeCrone, M. D.

"Mr. E. died of consumption (slow). Mrs. E. is now very low with same disease. No heredity in either family, and only communicable under reduced physical conditions."

Hixon, Chas. D. McDougall, M. D.

"Husband after four years died of tuberculosis. Wife, with no history of tuberculosis on either side, died in fourteen months after husband, of tuberculosis. She married a second time and six months before her death, the man, of good history, showed signs of tuberculosis that are gradually progressing."

Ironton, D. R. Alban, M. D.

"Mrs. S., consumptive, came under my care. Her family history good, but her husband died ten months previous with pulmonary tuberculosis. It is very evident that Mrs. S. contracted the disease from her husband."

Jackson, William Phillips, M. D.

"A lady who attended her husband, who died of tuberculosis, was stricken with acute tuberculosis and died within four months. No history of consumption in her family."

Justus, Walter G. Lowe, M. D.

"A young minister married a strong young lady. The husband soon developed into a full fledged consumptive. The wife nursed him until his death, and soon followed him."

Lima, D. W. Steiner, M. D.

"Mrs. M., no family history of tuberculosis, nursed her husband, who died, and soon after contracted the disease and died within a year of consumption."

Linndale, J. V. Mott, M. D.

"A case of wife contracting the disease from her husband."

Magnolia, D. L. McIlravy, M. D.

"A man, who had the trouble three or four years, was nursed by his wife, in whose family there was no predisposition to the disease. She began to cough and lose flesh, and is now under my care."

Marion, J. W. Thatcher, M. D.

"A perfectly healthy young lady, with no hereditary tendency to consumption, three years ago married a consumptive man who has just died from the disease. She now has incipient consumption. No doubt communicated from her husband."

Martinsburg, N. S. Toland, M. D.

"I had a brother die of the disease who had been married to a very healthy woman, in whose family consumption was not known; she soon after died of the same disease. Others I could refer to."

Marysville, H. A. Radebaugh, M. D.

"A man died in '93 of consumption. He was confined to his room and bed all winter, attended by his wife, a robust German woman in whose family consumption was unknown. She died of the disease within the year."

Minerville, W. B. Rosamond, M. D.

"Husband died of consumption. Wife, of a strong and healthy family, died later of same disease."

Minster, C. L. Davis, M. D.

"A man belonging to a consumptive family, soon after his marriage contracted the disease; his wife nursed him contracted the disease, and died before her husband. I have observed many such cases."

Mount Victory, J. J. Borne, M. D.

"E. G., age twenty-four, contracted consumption, and his wife, age twenty-two, I am positive contracted the disease from him and died. Wife's family has no history of consumption for a number of generations."

Newark, S. C. Priest, M. D.

"A wife remained constantly in a close room with a husband. She neglected herself in regard to pure air, food or clothing, began to run down, took cold, and died five years after husband."

Nevada, R. L. Souder, M. D.

"F., age about thirty, was ill of consumption and died. His wife was attacked with pulmonary hemorrhages, rapidly developed signs of pulmonary tuberculosis, and died the following year."

New Burlington, S. G. Sewell, M. D.

"F. H., after a lingering illness of tuberculosis, died. His wife nursed him, and during the last days of his illness developed a cough, and in about a year succumbed to the disease. Her family history was perfect as regards diseases of that character. I have seen other examples and am thoroughly convinced that tuberculosis is contagious."

New Petersburg, Rufus A. Dwyer, M. D.

"I have treated a great many cases and have known a healthy woman to contract consumption from her husband. It is contagious and infectious beyond doubt."

New Plymouth, E. A. Frampton, M. D.

"I treated a gentleman for consumption. Soon after his death one of his sons took it in an acute form and died. The wife and mother, who nursed the father and son, died with the same disease. She appeared well during my first acquaintance with her, but not long since one of her sisters died with the same disease."

New Springfield, Wm. R. Granger, M. D.

"I treated a young married man who died of tuberculosis. His young healthy wife, of a very robust and healthy family, died in a short time; presumably contracted the disease from kissing her husband."

North Fairfield, E. A. Smedley, M. D.

"Mrs. T., with the best of family history, perfectly healthy herself, married a man with tuberculosis. She nursed him and within eighteen months after his death she had tubercular hemorrhages from her lungs."

Norwood, J. C. Cadwallader, M. D.

"A young man, married last October, has consumption. No history of the disease in wife's family, though she at this time shows incipient phthisis."

Oberlin, Julia Chapin Jump, M. D.

"Mrs. V. nursed her husband through his illness. He died of tuberculosis and five years later she died of the same disease. No consumption in her family."

Old Fort, J. W. Kippel, M. D.

"Young lady married a tubercular man, lived with him two years until he died. Her family history shows no trace of the disease. Two week after husband's death, whom she had nursed, she took to her bed and in seven weeks died of phthisis.

Plattsburgh, H. F. Wildasin, M. D.

"I saw a case where a man and two or three of his brothers died of consumption. His wife waited on him, slept with him, she being a stout, healthy woman when she married, with no trace of the disease in her family, but two years after his death she died of the disease."

Pleasanton, E. M. Bean, M. D.

"I knew a man, who died of consumption, and a short time after the wife, a strong woman at the time of his sickness, died of the same disease."

Pomeroy, Richard Owen, M. D.

"Last year I had a case where the man died of consumption, and the wife is now suffering and will probably die with the disease."

Portsmouth, S. S. Halderman, M. D.

"Mrs. B., with a clear history of no heredity, died within two years after contracting cough from tuberculous husband, whose death preceded hers. I could give at least a half dozen similar cases."

Ravenna, George Sadler, M. D.

"I have a case in a man, and his young wife, formerly healthy, is contracting the disease from her husband."

Reiley, David D. Borger, M. D.

"Mr. B., family history tuberculous, first wife had no history of consumption in any part of the family, yet she died in six years of the disease. Second wife was of non tuberculous family; at the time of her marriage was a marvel of health. Mr. B. died two years and a half later leaving his second wife in first stages of consumption, but her robust constitution and good care and treatment has carried her back to tolerable fair health."

Reynoldsburg, J. B. Dysart, M. D.

"One case where I believe a wife contracted the disease from her husband."

Rural Dale, James F. Leeper, M. D.

"In two cases the husband died with consumption and in one case, within four months after, the wife had hemorrhages of the lungs and died, and in the other case the wife died within six months."

Rushylvania, J. G. Sutton, M. D.

"Mr. G. had consumption, and died within two years after his marriage. One year later his wife died of the same disease. Her family history free from the disease. I could give many other similar cases."

Rushville, W. C. Lewis, M. D.

"I have known strong, healthy women, without heredity, marry men who have died within five years. These wives waited upon their husbands, contracted the disease, and died within two years. There seem to be more women than men contract the disease in this way. I could say a good deal on this subject."

Sidney, M. F. Hussey, M. D.

"A case came under my observation long before I began to practice. I had a sister who was absolutely free from it, and in whose family it was unknown, die of the disease after caring for a tubercular husband for eighteen months."

Sidney, Wm. Mi holland, M. D.

"Mrs. P., a strong woman and of good family, nursed her consumptive husband, and in two years died of similar disease. Such ought not to marry."

Sidney, B. M. Sharp, M. D.

"Had one case some three years ago in which a young and healthy wife and mother, contracted the disease from her husband, and died in twelve months. The husband still living, but a mere shadow."

Steubenville, Joseph Robertson, M. D.

"I knew of the wife of a physician who was suffering with consumption who, herself, did not inherit the disease, but it was evidently communicated to her from her husband, and she died a short time before he died. I could repeat similar cases."

Stoutsville, C. A. Kefauver, M. D.

"Am now treating the wife of a man who died of it. She was always stout and healthy with no family history of the disease. She will not live much longer."

Toledo, Christian Zbinder, M. D.

"A young man suffered from chronic phthisis, married a healthy girl, they lived a few years together, had two children, both died in infancy, then the man died, and a few weeks later the wife, of consumption."

Uhrichsville, W. H. Oviatt, M. D.

"Mr. W. contracted stone cutter's consumption and died. His daughter contracted the disease and died, and her husband also contracted consumption and died; lastly, Mrs. W., the wife, died of the disease."

Uhrichsville, J. E. Groves, M. D.

"Mr. L. died of tuberculosis. His wife, in whose family there had never been any tuberculosis, contracted the disease by nursing him, and died two years later."

Wapakoneta, E. R. Freeman, M. D.

"I treated a man who died of consumption. In less than a year his child died, and in eighteen months his wife, of same disease. No family history of consumption."

Washington C. H., C. M. Wilson, M. D.

"Man died after suffering nearly a year with acute tuberculosis. His wife was his nurse and constant attendant; became affected before his death and died in less than a year. I know of another case where the husband followed the wife in less than two years."

Washington C. H., S. A. Ireland, M. D.

"Mr. D. had disease for several years, and his wife, though a healthy woman, no consumption in her family, died later of same disease. Mr. C. died of consumption, and Mrs. C. some two years later."

West Baltimore, W. I. Christian, M. D.

"Mrs. W., with no lung trouble, married tubercular husband, and, on taking cold, began to cough, and three months later died of consumption."

West Salem, D. N. Garner, M. D.

"Husband nursed by wife, whose previous history was good, in less than four months showed evidence of tuberculosis."

Whitehouse, E. Bradley, M. D.

"I know of cases of perfectly healthy women marrying consumptive men, and dying of consumption before the husband. I could recall dozens of cases."

Wilmington, L. M. Greene, M. D.

"Was intimately acquainted with a man who died of consumption. At the time of his death his family seemed to be in good health. In a few months one son, then another, and finally his wife died of the disease. Later a daughter."

Winchester, C. S. Corboy, M. D.

"Had a case where man died of tuberculosis, and wife, a healthy woman before, died in a year's time of the disease."

Youngstown, R. H. Montgomery, M. D.

"Man died of phthisis, and in one year his wife followed, from same disease. No heredity."

Youngstown, J. B. Kotheimer, M. D.

"Mrs. L. died of consumption. History shows inheritance. Mr. L married again, and died of consumption. Second wife died one year after him, having nursed him during his illness and contracting the disease. Five children, by first wife, all died of consumption."

DISEASE TRANSMITTED BY WIFE TO HUSBAND.

Ashland, W. H. Sampsel, M. D.

"A perfectly healthy and robust husband, without the slightest family history of tuberculosis, contracted the same from his wife, the mother of said wife having died from tuberculosis, and the husband succumbing to the disease in thirteen months."

Arehbold, A. J. Murbach, M. D.

"A. L. B., now in the last stages of consumption, came from a family where the disease had never existed. He, a healthy and robust man twelve years ago, married a lady coming from a family of which a number had died of consumption. After the birth of their second child, the wife developed consumption and died. Shortly after her death Mr. B.'s health began to fail, and he is now in the last stages of the disease."

Barberton, T. Eliott Tait, M. D.

"I observed a case where the wife died after a lingering illness, and within a year the husband died of the same disease."

Batavia, Allen A. Ashburn, M. D.

"One case—woman—age twenty-three years at death, cause, transmitted phthisis. Shortly after her death the husband contracted the disease and died. No history of tuberculosis on either side of his family, but he was constant in his personal attention and care of his wife during the last months of her illness; sputa was handled on cloths or papers by him, and so disposed of by burning."

Beaver, A. L. McAllister, M. D.

"A case communicated from wife to husband. He nursed her until her death."

Bellaire, P. W. Kerns, M. D.

"A lady, school teacher, age 24, married, disease traceable by heredity through four generations, died in five months after marriage of consumption. Husband, farmer, age 25, no heredity of disease in his family, two months after death of wife, showed symptoms and is now in the last stages of the disease."

Brookville, C. Gish, M. D.

"An eminent physician's wife died of phthisis and in a year or so he succumbed to that disease."

Bucyrus, W. S. Jackson, M. D.

"Mr. J., age 50, died last year. Absolutely no family history of any inherited disease, but he had nursed his wife, who died two years previous of phthisis."

Bluffton, F. C. Steingraver, M. D.

"A middle aged lady, after lingering a couple of years, died of consumption. Her husband, apparently a robust man, married again and in a year or so both he and the second wife died of consumption."

Campbell, L. D. Marcum, M. D.

"A neighbor of mine, a healthy man of 30 years, married a consumptive woman. He nursed her for about fifteen months and at the expiration of that time he too began coughing, and is now about to die of the disease."

Celina, J. M. Browder, M. D.

"A wife died, the husband constantly with her; no hereditary history; husband died within twelve months after."

Canton, C. H. Evans, M. D.

"Mrs. A. married a vigorous and healthy man. She was a consumptive and her husband contracted the disease and died two years prior to her death of consumption."

Chesterville, B. F. Jackson, M. D.

"A married lady, consumptive, constantly attended by her husband, a healthy, rugged man of 35 years. He was constantly in her room for four months, and died of the disease within a year after her death."

Cherry Fork, O. B. Kirkpatrick, M. D.

"A man under my care, with good family history, nursed his consumptive wife, and now has consumption."

Cleveland, S. E. Kaestlen, M. D.

"A. K., age 37, died of consumption after two years and a half of suffering. Six months after, J. K., husband, age 40 years, always strong, developed same disease and died."

Cleveland, E. A. Gatchell, M. D.

"A strong, healthy man had a wife who died of phthisis; he was with her almost constantly the last year of her life. After her death he began to cough, lost 82 pounds of flesh, and had 48 hemorrhages, but he recovered completely."

Cincinnati, Massillon Cassat, M. D.

"A man, 35 years old, who was strong, and whose parents, brothers and sisters were strong, had a consumptive wife. He was very fond of her, and after her death contracted the disease."

Circleville, Andrew H. Shaeffer, M. D.

"A wife having a hereditary diathesis, died of consumption. The husband's family had none, but in time he also died of consumption."

Chicago, D. W. Rumbaugh, M. D.

"Mr. S., whose family history was good, and who was in excellent health, after nursing a consumptive wife, contracted the disease and is passing into a well developed case of consumption."

Chippewa Lake, C. W. Hollis, M. D.

"Mr. B., age 40, and his wife, age 32. Wife was taken sick with tuberculosis and in a few months died. The husband contracted the disease before her death. There was no hereditary taint in the parents of the husband."

Cincinnati, R. C. Longfellow, M. D.

"A man, who undoubtedly contracted the disease from his wife, who died of general tuberculosis, is now under my care."

Columbus, Norman Gay, M. D.

"I had a case where the wife was in the last stages of tuberculosis; the husband, apparently well, slept in the same bed with her, and in six months after her death he died."

Columbus, Theodore Jasper, M. D.

"A friend of mine, of the healthiest stock possible, married a girl whose parents had died of consumption. After her first childbed, she developed consumption, and he, sharing the same bed with his wife, contracted the disease and died a year and a half before the wife."

Columbus, F. H. Darby, M. D.

"Mrs. J. died of consumption, attended by her husband, who died not long after of the same disease."

Columbus, Frank Warner, M. D.

"Mrs. M. was taken ill with consumption, and in six months' time her husband was taken down with the same disease. The wife had predisposition, the husband not."

Custar, H. Mannhardt, M. D.

"Mr. S., whose family history is exceptionally good, contracted consumption from his wife, who inherited the disease (from her father's side)."

Downington, J. O. Clark, M. D.

"A case, in my opinion, undoubtedly communicated by consumptive wife, who died, soon followed by husband, whose father and mother say that there was never any lung diseases in their family."

Farmersville, G. C. Henkel, M. D.

"A husband, whose family was entirely free from tuberculosis, contracted the disease from his wife, whose family was not."

Fayetteville, E. W. Love, M. D.

"I have lately had two cases where the husband in each case died of consumption, in my opinion, communicated to them from consumptive wives."

Felicity, B. F. Mitchell, M. D.

"I was intimately acquainted with a couple; ten years after marriage the husband died of consumption. Two years later she married a healthy man who contracted the disease and died. She again married and in two years the third husband died of consumption. She finally died of the same disease."

Findlay, F. W. Entrikin, M. D.

"Now on hand, a man not predisposed, who will live but a few months; wife died of the disease. He slept with her to the last and has since slowly declined."

Fort Recovery, Arlington Stephenson, M. D.

"I treated a lady for consumption and later on the husband and only child, who all died. On husband's side no tuberculosis could be traced."

Gnadenhutten, B. F. Coen, M. D.

"I treated Mrs. J. in the last stage of consumption. Her husband was in good health, but occupied the same bed and was rather careless with sputa. In less than three years the husband died with the same disease."

Georgetown, Sidney C. Gordon, M. D.

"A mother died in '83 or '84, a son in '88 and the father in 1893. Also another son. Gross carelessness in regard to sputa."

German, G. Jamison Martz, M. D.

"I treated Mrs. C. for tuberculosis, who died, and am now treating her husband who has incipient phthisis."

Green Camp, D. Free, M. D.

"One case in which a man, considered extremely healthy, married a woman who had consumption. He waited on her for about two years, contracted the disease, and died just one day previous to the woman, causing a double funeral."

Goshen, A. Morris, M. D.

"A wife died, the disease seeming in her case to be hereditary, and in about a year and a half the husband died of the same disease, no case ever having occurred in his family before."

Hanoverton, J. J. Yates, M. D.

"Mrs. A., a delicate woman, died of consumption; her husband, an unusually robust man, without the least taint of tuberculosis in any branch of his family, died of the same disease within eighteen months."

Haydenville, C. O. Allen, M. D.

"Mrs. T. came of a consumptive family, Mr. T. was stout and had no appearance of the disease; four years after marriage she died of the disease, he following within six months."

Jersey, J. T. Mills, M. D.

"Wife in phthisis pulmonalis, aged 22, family history tubercular, died; husband, 25 years old, family history good, began to develop pulmonary phthisis and is now a consumptive. Another similar case."

Kolida, C. F. Douglass, M. D.

"Mrs. B., consumptive, possibly hereditary, died in July. Her husband, a stout, robust man, with no tendency to consumption prior to wife's sickness, contracted the disease and died the following spring."

Loramies, Thomas Walkup, M. D.

"Mrs. G. had consumption and died, nursed by her husband, who occupies the same bed. He took the disease and died."

Louisville, W. O. Baker, M. D.

"A wife took consumption and died in a few years, soon after the husband died of the same disease."

Louisville, J. H. Rogers, M. D.

"Mrs. S. contracted consumption and died. Her husband, a strong, healthy man, died the following year, undoubtedly contracting the disease from his wife."

Moorefield, E. D. Moore, M. D.

"Mrs. M. developed consumption in April, died in July. Her husband began to cough before she died and in less than eighteen months died of the same disease."

Moxahala, E. L. Goff, M. D.

"Mrs. W., aged 30, had consumption for five years. Mr. W., a very robust man, began to complain some three or four months prior to his wife's death, and in about six months died of the disease. Could give a dozen such cases."

Mt. Vernon, S. D. Spees, M. D.

"Treated a lady the last week of her illness, duration four years, and the husband, having no predisposition to the disease, began to cough and rapidly declined. The disease undoubtedly being contracted from wife."

New Burlington, Chas. S. Estep, M. D.

"Mr. H., stout, robust man, waited on his wife for five months, when she died. He went down to a walking skeleton with all signs of consumption, but regained a fair degree of health in a few years."

New Philadelphia, J. F. Maclean, M. D.

"Have known a case of suspected consumption in a husband whose wife died with the disease. Also had a husband die with consumption who had a good family history but had been married to a chronic consumptive for about eighteen months. Wife died about two years later. The husband was strong and well when married."

Nimisila, Adam Sisler, M. D.

"A young couple came here and within a year the wife died of consumption. In about a year later the husband died of the same disease. No consumption in his family.

North Georgetown, J. M. Earnst, M. D.

"Mr. B. nursed and took care of his wife who died of consumption, and in less than three years he took it and died. No consumption in his family."

Nottingham, W. O. Jenks, M. D.

"I treated a married woman who died of consumption. Her husband married again in less than a year and in six months after died of the disease. The next year the second wife died of consumption."

Oxford, C. O. Munns, M. D.

"A. B., strong, healthy, without history of consumption in his family, married a consumptive girl who died soon after. The husband developed consumption and died."

Richmondale, Thos. W. Evans, M. D.

"A husband, family history free from the disease, contracted consumption from his wife. The wife died, and in five months the husband was taken down and died in about eight months after his wife."

Swan, W. R. Moore, M. D.

"The disease was developed in a strong, healthy man, without any hereditary taint, about six months after the death of his wife whom he nursed and carefully watched for a year prior to her death from consumption."

Selina, T. C. Edgington, M. D.

"A young man, twice married and both women dying of consumption, having no predisposition as to heredity, died one year after the death of his last wife."

Spencer, Wm. H. Stroup, M. D.

"A lady died of consumption. Husband began to cough, and I believe will die of consumption. No consumption in his family."

Trenton, H. Schainfeld, M. D.

"Mrs. H., after her last babe was born, contracted lung trouble, going from bad to worse until death claimed her. Mr. H., healthy man, shared her bed all the time and began to cough, and within a very short time shared the lot of his wife."

Uhrichsville, W. H. Oviatt, M. D.

"Daughter of a consumptive contracted same and died, and her husband soon after died of same disease."

Van Wert, J. Arthur Hines, M. D.

"G. R., whose wife died of pulmonary phthisis, healthy parentage, German, age thirty-five, 'never sick in his life,' acquired the disease and died."

Versailles, J. E. Fackler, M. D.

"A young man married a woman of consumptive family. She died, and in a few years consumption developed and he also died. No consumption in his family."

West Cleveland, Nellie C. Mosier, M. D.

"A case where wife died of consumption, and I hardly think the husband will live two months. He knows of no consumption in his family."

West Mansfield, J. J. Bowker, M. D.

"A case where husband slept with consumptive wife."

West Middleburg, C. C. Stokes, M. D.

"One case where wife, after a long period of tuberculosis, died. The husband was very attentive, and in a few months manifested the same disease and died."

Williamsport, T. C. Tipton, M. D.
"A man died of consumption after nursing his wife who died of the disease."

Wilson, J. W. McGloughlin, M. D.
"A man married a consumptive woman and in two years contracted a hollow consumptive cough. She died and he is weak-lunged. No consumptive taint in his family."

Yellow Springs, W. M. Haffner, M. D.
"A wife had consumption. The husband contracted the disease by sleeping in the same room with her. She died, and a year or so after he also died. He had no family taint."

Youngstown, J. B. Kotheimer, M. D.
"Mrs. L. died of consumption. History shows inheritance. Mr. L. died later of the same disease."

Zanesville, A. L. Jackson, M. D.
"I treated a lady who died of consumption. Her husband, against my orders, occupied the same bed, and although strong and healthy and only thirty years old, in less than a year died of the same disease."

DISEASE TRANSMITTED BY HUSBAND TO WIFE, OR WIFE TO HUSBAND.

Akron, James P. Boyd, M. D.
"Have seen many instances where wife has seemed to contract it from husband, or vice versa."

Alliance, H. H. Shafer, M. D.
"I have seen where wife gave it to husband, and where husband gave it to wife. These are facts in my opinion."

Ashland, P. H. Clark, M. D.
"I could give many instances. From sleeping in the same bed and taking the general care of the sick, especially of the wife taking the entire charge of the husband, or vice versa.

Ashley, M. M. Scheble, M. D.
"I have known consumption to be communicated from a man to his wife and vice versa."

Bowling Green, W. M. Tuller, M. D.
"Several cases where the husband and wife, who had no hereditary history, have contracted the disease from the other."

Bluffton, I. R. Wetherill, M. D.
"I have often observed where the wife or husband slept in the same room and no precautions were taken, that both in time became affected."

Canal Winchester, L. W. Beery, M. D.
"Have had a few cases in which the husband and wife died of consumption, and in which I was led to believe that one communicated the disease to the other."

Cincinnati, E. W. Ludlow, M. D.
"Two cases. Wife gives history, several having had the disease in her family; husband gives negative history. Disease further advanced in husband."

Chicago, E. V. B. Buckingham, M. D.

"I have treated several cases where either the husband or wife died of consumption, the other having no hereditary taint, yet, within a short time after the death of the one the other died of the same disease."

Cleves, Edward F. Davis, M. D.

"I have known of three cases where one patient would die of consumption and the other would contract the disease, and in one case the children also."

Cleveland, A. F. Green, M. D.

"Husband and wife, one well and strong, nursed and slept with the other suffering from consumption, and died of the same disease in a few months."

Dayton, A. H. Iddings, M. D.

"Strong indications of the disease having been communicated from husband to wife and vice versa."

Defiance, D. P. Aldrich, M. D.

"I have seen many cases where husband or wife in caring for the other took consumption, where there was no taint of consumption in their family history."

East Liberty, R. R. Smith, M. D.

"I have had several cases where husband and wife have both died with consumption, one or two years apart, where no taint of the same could be traced on one side."

Frankfort, T. E. Griffiths, M. D.

"Where husbands and wives have slept together, where proper care of the sputa was not taken."

Huron, Joseph P. Esch, M. D.

"I have known several cases where both husband and wife died with consumption, where I was perfectly satisfied that one contracted the disease from the other."

Lancaster, G. A. Harman, M. D.

"I have known the wife to follow the husband, and vice versa, where the other did not seem to have any heredity."

Laurelville, W. H. Samson, M. D.

"I know of two or three families where the wife died of pulmonary consumption and now the husband is in the last stage of same disease."

Magnetic Springs, H. McFadden, M. D.

"I have known of several cases contracted by intermarriage of families where there was consumption on one side and none on the other, where both husband and wife died of the disease, the one on the consumptive side being nursed by the other."

Marietta, C. W. Eddy, M. D.

"In two or three instances I have known either husband or wife contracting phthisis, who had no history of lung trouble in the family."

Mt. Vernon, F. C. Larrimore, M. D.

"Several marked cases where the disease was communicated by husband to wife, or vice versa."

Newark, B. F. Spencer, M. D.

"A man, well formed and of exceptionally good family, married a woman who died of pulmonary consumption. He married again and his second wife died of the same disease. He also died of well marked pulmonary consumption."

New Castle, J. W. Snider, M. D.

"I have seen several cases of apparent contraction of the disease by sleeping with, and waiting on, diseased husband or wife."

Newark, H. R. Burner, M. D.

"I have known numerous cases where the disease seemed to be transmitted from husband to wife and from wife to husband. More frequently, I think, from husband to wife."

New Lexington, J. G. McDougal, M. D.

"I have several instances in mind where the husband or wife died of consumption, and the other, with no history unfavorable, has contracted the disease."

Owensville, T. A. Mitchell, M. D.

"Two instances where tubercular persons were wedded to perfectly healthy persons. The tubercular person dying, in each case, within two years, and soon after the other died of the disease."

Paulding, P. A. Dix, M. D.

"I have known cases where I was satisfied that either the husband or the wife communicated the disease to the other, and both died in a short time, where one had been healthy previous to marriage."

Springfield, T. M. Reade, M. D.

"The only cases of contagion I have observed were those of wives whose husbands died of consumption. Probably a dozen cases in as many years."

Tranquility, E. M. Gaston, M. D.

"In several instances where husband or wife died with consumption, after waiting upon companion suffering from the disease, having no history of their own hereditary trouble. In two cases where the fathers died of the disease, while they were sick four children in one family and three in the other died of tuberculosis, and after the father's death the wife, as well as the remaining children, showed strong marks of the disease, but were ultimately able to throw it off."

Toledo, James Donnelly, M. D.

"I know of a few cases in which the husband had phthisis and later the wife was stricken down with the same disease."

Winona, A. LeCope, M. D.

"I have known a case or two where the husband died with consumption and afterwards the wife, who cared for him, slept with and nursed him."

The following circular on the Prevention of Consumption was adopted at the April meeting of the Board, and 100,000 copies were printed:

THE PREVENTION OF CONSUMPTION.

ISSUED BY THE

OHIO STATE BOARD OF HEALTH.

1894.

Consumption, or pulmonary tuberculosis, is now known to be a *communicable*, that is, a *contagious* disease.

It is caused by the growth in the body of a microscopic plant or germ which sets up inflammatory conditions of the lungs causing fever, wasting and death in many cases within two or three years. The germ causes the growth in the lungs of little masses known as tubercles, and as the disease progresses these soften and break down and are expectorated by the patient. The expectoration contains millions of these minute plant bodies which, when the expectorated matter has dried, are set free and are blown about here and there by the winds or air currents of houses. They are taken into the lungs of some other person by breathing, and if they find a soil suitable for their growth, again produce the disease. If we could but destroy all these germs which are the sole exciting cause of the disease, consumption could be completely stamped out.

We should thoroughly realize that consumption is *communicable* and therefore *preventable.*

The gravity of the disease should also be appreciated. Ceaselessly, during every hour of time, by night and by day, fourteen persons die of consumption in the United States alone; and about one-seventh of all who die among civilized races die of tuberculosis of some form.

We have become for this disease like men in battle who see their companions dropping from the ranks with almost fatalistic indifference. An every day occurrence soon becomes unnoted.

Consumption is preventable. This should be the cry all over the land.

The exciting cause, as already stated, is positively known to be the germ, called the *bacillus tuberculosis*, and without it the disease could not occur; but there are many predisposing or helping causes which enter into the production of consumption, and these must not be neglected. The germs are the seeds, but like all other seeds they must have a suitable soil in which to grow.

For many years it was held that consumption was inherited. Believing this, it was but natural that we should fold our hands and allow the consumptive-tainted to die. We know now that the disease is not transmitted by inheritance—the germ does not pass from father or mother to the offspring. Undoubtedly, however, a marked tendency to contract the disease *when exposed to the exciting cause—the germ*—is an inheritance from consumptive parents, and every possible precaution should be taken by such persons to avoid this exciting cause, and to increase bodily resistance to the disease.

Consumption is largely a disease of civilization, due to living in close, poorly ventilated houses and cities, amid other unhealthful surroundings.

Certain occupations also tend to produce it, and especially occupations where there is constant breathing of foul air filled with irritating dusts.

Damp soil and damp houses, and all the unsanitary conditions which produce lowered health, act as predisposing causes.

HOW PREVENTED.

Let us first consider the destruction of the germ—the exciting cause.

This we find principally in the matter expectorated by consumptives. The germ is never in the breath of the patient, nor in the exhalations or excretions from the body, except when the bowels have become affected, when it may be found in the stools.

There is no danger then in associating with a consumptive, nor allowing him to go abroad, if we destroy the germs contained only in the expectoration; and the expectoration only becomes dangerous after it has dried and the germs are liberated.

The germs may be destroyed by burning the expectorated matter, or by casting it into a solution containing a disinfectant strong enough to kill them. When handkerchiefs or cloths are used, or when the patient expectorates on the floor, or into a dry cuspidor, the germs become free, by drying, and are blown about the room, settling upon the floor, furniture, window ledges, walls, etc. Such a room is dangerous, and especially so if poorly ventilated, to any person predisposed to the disease.

It has been positively proven that these dried germs will remain alive and active for the production of the disease for several months.

With very careless, or very ill and feeble patients, the clothing and bedding may become soiled with expectorated matter, and become a source of danger to others.

Consumptive patients on the streets frequently, perhaps usually, expectorate on the ground or pavement, and the germs becoming dried may be blown hither and thither, endangering possibly the lives of hundreds.

In various other ways a person afflicted with consumption, through ignorance or a criminal disregard for others, may sow the seeds of death broadcast.

Consumption in its earlier stages is, in many instances, *curable* as well as preventable, but the chances of recovery are greatly reduced by living in an atmosphere highly infected by the germs of the disease, as the patient may reinfect himself. It is of the greatest importance to the patient, therefore, as well as to those around him, that his infectious expectorations should be promptly destroyed.

While consumption, or pulmonary tuberculosis, is the most common form of tuberculosis, the germ may grow in other parts of the body. Tuberculosis of the bowels is of frequent occurrence, especially in children, and is usually produced by eating meat or drinking milk from an animal affected with the disease. Tuberculosis prevails among animals, especially milch cows, to an unknown but very great extent, so that the danger from this source is considerable; and health authorities should be cordially supported in every possible effort to prevent the sale of infected animal products.

With these general remarks concerning the cause and manner of production of consumption, we may proceed to consider specific

RULES FOR PREVENTION.

1. In the house the expectorations of a consumptive patient should be received on bits of old cloth or Japanese paper and be burned *at once*, or received in cuspidors or spit-cups containing a solution of

Corrosive sublimate	1 drachm	Label poison.
Hydrochloric acid	2 ounces	
Water	1 gallon	

2. The clothing and bedding of the patient should be laundried separately, and thoroughly boiled.

3. Sweeping should be done with a dampened broom, or with wet tea leaves or sawdust on the floor, and the dust removed from the furniture, etc., with a cloth wet with the disinfectant solution.

4. Dishes, glasses, cutlery, etc., used by the patient should be scalded before being used again.

5. It is better for the patient and safer for others that he sleep in a room alone, and especially in a bed to himself.

6. The disease may be transmitted by kissing, especially kissing upon the mouth.

7. Admit an abundance of pure air and sunlight to the patient's room.

8. If the house is damp use proper means to secure dry foundation walls and basement.

9. On the street the patient should either use an expectoration flask (many such are made) or cloths or papers, to be burned as soon as possible. If a handkerchief must be used, place it in boiling water or in a disinfectant solution before the expectoration can dry.

TO AVOID CONSUMPTION.

1. Eat meat cooked well done, as this will destroy the germ. Boiling will destroy the germs in milk, and young children who are especially prone to tuberculosis of the bowels, should be given only boiled milk.

2. A mother with consumption should not suckle her child, as she may infect it through her milk.

3. Do not move into a house, or sleep in a room in which a person has died of or been sick with consumption, until it has been properly disinfected.

4. Avoid as far as possible occupying for any length of time with a consumptive person, a badly ventilated room, car or vessel.

5. If a tendency to the disease has been inherited, be specially guarded against all sources of infection. In addition select an outdoor occupation as free as possible from dust; use every means to secure a good physical development, particularly of the chest and lungs; select a dry soil for a habitation, and have living and sleeping rooms freely ventilated and well exposed to direct sunlight.

6. In selecting a mate in marriage choose one free from any inherited scrofulous or tubercular taint.

We trust all persons reading this circular will aid in disseminating the information it contains. It is only by arousing the public to a realizing sense of the fact that *consumption is communicable and preventable* that we may hope to stay the ravages of this disease, which alone slays more than all the other contagious diseases combined.

Copies of this circular will be sent free to any person applying to the

SECRETARY OF THE STATE BOARD OF HEALTH,
Columbus, Ohio.

The circular on the Prevention of Consumption has gained entrance to thousands of homes containing victims of this disease, and we may confidently expect that the greater precautions against contagion which will be taken as a consequence will be the means of saving many persons from the disease.

Another result of this "educational crusade" to be hoped for, is that enlightened public opinion will soon enable health authorities to adopt more stringent measures for the prevention of this, the greatest plague of mankind.

The circular letters which follow sufficiently indicate the methods adopted to disseminate among the people correct information in regard to the causation and prevention of consumption.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, O., *May* 1, 1894.

DEAR DOCTOR: Answers have been received from a considerable number of the physicians of Ohio in regard to our inquiry concerning tuberculosis and its prevention.

It is gratifying to note that with practically no exceptions the members of the profession have expressed a willingness to co-operate with the Board in an effort to lessen the spread of this disease.

Some exceedingly interesting matter has been collected showing the contagious character of tuberculosis, which will be published in the near future, and a copy of the report sent to you.

It has been decided, for the present, not to require physicians to report cases of tuberculosis, as it is believed that the public is not sufficiently well informed as to the contagious character of the disease. Every effort will be made to spread among the people the knowledge that consumption is a *communicable disease* and therefore *preventable*, and to this end dependence must largely be placed upon members of the medical profession.

Enclosed herewith are copies of a circular adopted by the Board on "The Prevention of Consumption," and you are requested, if the circular meets with your approval, to place a copy in the hands of each family where you are called on account of tuberculosis, and to urge compliance with its directions. As many additional copies as you desire will be sent on application.

The local authorities will be instructed to have proper measures of inspection carried out in all cases where death occurs from pulmonary tuberculosis, and we trust you will aid in having this measure enforced.

Respectfully,

C. O. PROBST, M. D., *Secretary.*

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, O., *May* 8, 1894.

To the Editor:

DEAR SIR: I send you enclosed a circular just issued by the State Board of Health on "The Prevention of Consumption," and earnestly request your assistance in making public the information it contains.

There is no longer a doubt as to the contagiousness of consumption, nor that the disease may, to a large extent, be prevented. For many reasons it is impracticable, if not undesirable, to treat consumptive patients as we do those afflicted with diphtheria, small-pox or contagious diseases of that class. A consumptive is not dangerous to others with proper care, and at present we must depend on an educational campaign.

More deaths occur from consumption each year in Ohio than from all the other contagious diseases combined; and with your help we hope to impress the general public with the fact that this great annual slaughter can be very materially lessened.

I shall be greatly obliged if you will kindly send me a copy of what you publish on this subject.

Respectfully,

C. O. PROBST, M. D., *Secretary.*

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, O, *May*, 1894.

To the Superintendent of Schools:

DEAR SIR: The State Board of Health has determined to commence a crusade against consumption. It has been decided that for the present this must be largely a matter of education. A circular on "The Prevention of Consumption," enclosed herewith, was prepared for popular instruction.

The physicians of Ohio have agreed to place copies of this circular in all families where they are called on account of consumption. The circular will also be printed by a large number of our newspapers; and we hope to enlist your aid in spreading the information this circular contains.

There is no longer a doubt that consumption may be communicated from one person to another. Hundreds of such cases have been reported to us by the physicians of Ohio. It is also true that this may be often prevented by measures easily enforced.

We desire to know whether you think it would be advisable to impart such information to advanced pupils under your charge. It would doubtless be ill-advised to excite unnecessary alarm, and especially to too seriously impress children with the danger of associating with a consumptive person. But would it not be well that every pupil leaving school should realize that one-seventh of all who die are victims to a disease which in many cases might be prevented? That this disease may be communicated by the sick to the well, but that this may be prevented by comparatively simple measures?

Let our people fully realize the dangers that encompass them, and how these dangers may be averted, and we may confidently expect that the law of self-preservation will work out the remedy.

Additional copies of the circular on Prevention of Consumption will be sent you if desired.

Respectfully,

C. O. PROBST, M. D., *Secretary.*

OHIO STATE BOARD OF HEALTH,

OFFICE OF THE SECRETARY, COLUMBUS, O., *June* 6, 1894.

To Local Boards of Health:

We invite your attention to the circulars enclosed herewith on the Prevention of Consumption.

Copies of this circular have been sent to all physicians in the State, with the request that they be placed in families to which they are called on account of consumption.

Your attention is specially directed to the necessity of disinfecting rooms which have been occupied by persons suffering from consumption. Boards of health should offer to disinfect, free of charge, any house in which a case of consumption has occurred. Physicians have been requested to report to the board of health, for disinfection, all houses in which consumption occurs, and which have not been properly disinfected by the family.

It has been deemed advisable, for the present, to depend on the family physician for placing the circular on the Prevention of Consumption in families where the disease exists. Additional copies will be furnished to boards of health, on request, for such other distribution as they deem advisable.

Now, that it has been established that consumption is a *communicable*, and therefore a *preventable* disease, there should be a combined effort on the part of health authorities and the medical profession to stay the ravages of this great plesgue. We bespeak your cordial assistance.

Yours truly,

C. O. PROBST, M. D., *Secretary.*

SMALL-POX AND VACCINATION.

BY THE SECRETARY.

The past year has witnessed more than the usual prevalence of small-pox, not only in Ohio, but in a large number of the United States. In Chicago, Brooklyn and Milwaukee, the disease assumed epidemic proportions, and health authorities throughout the country were alarmed at the outlook. In our own State there was good cause for alarm, considering the many independent centers of infection existing at one time, and the large number of people unprotected by a previous attack of small-pox or by vaccination. A general epidemic was only averted by the prompt action of the State and local authorities in enforcing proper measures.

About the close of the year 1893, small-pox was reported in Columbus; it then broke out in Springfield, and chronologically, in the order named, appeared in the following places, viz.: Shelby, Toledo, Lima, Worthington, Vinton, Lorain, Cleveland, Collinwood and Luckey. The disease was repeatedly introduced into Columbus, Cleveland and Toledo, but did not spread to any great extent.

During January of 1894, numerous reports of outbreaks in other States were received. The news from Chicago was far from assuring. The secretary of the Illinois State Board of Health, in answer to an inquiry, stated in a letter of the 17th of January, "I am not able to give you reliable information as to the extent of the disease in Chicago since my last report. Enough is known to warrant me in asserting that the disease is increasing rapidly in the city, new centers of infection being frequently discovered."

Early in February the following circular letter was sent to the general managers and superintendents of all railroads operated in whole or in part in Ohio:

OHIO STATE BOARD OF HEALTH,

SECRETARY'S OFFICE, COLUMBUS, O., *February* 5, 1894.

To General Managers and Superintendents of Railroads:

DEAR SIRS: I beg leave to call your attention to the wide prevalence of small-pox in the United States at this time, and to suggest the desirability of requiring vaccination of all railwsy employes, but especially trainmen, freight handlers, car cleaners, etc.

Within the past two months small-pox has been reported in the following States: Massachusetts, New York, Connecticut, Pennsylvania, West Virginia, Ohio, Kentucky, Tennessee, Virginia, Michigan, Illinois, Minnesota, Wisconsin, North Carolina, Indiana and Louisiana.

In Chicago small-pox prevails to an alarming extent, and has recently been carried from that city to Springfield, Ohio. With small-pox so widely prevalent there is considerable danger of railway employes coming in contact with the disease. A case in

point has just occurred. On the 25th of last month a woman, broken out with small-pox at the time, traveled by train from Cleveland to Vernon Station, Ohio, exposing passengers and trainmen to the disease. Other recent cases point to this danger.

A *coach cleaner* developed small-pox in Chattanooga, Tenn., November 7, 1893. A week or two later a *Pullman porter* came down with small-pox at Nashville, and about the same time a case developed in a person in Louisville, Ky., who worked in a laundry where the effects of Pullman cars are washed.

Vaccination and revaccination of railroad employes would at all times, we believe, be of advantage to railroad companies as well as a safeguard to the traveling public; but the necessity for this measure may be specially urged at the present time, when small-pox is so widely scattered over the United States.

If action to this end is taken by your company we should be pleased to know of it.

Very respectfully,

C. O. PROBST, M. D., *Secretary.*

Railway authorities responded very promptly, and within a short time most of their employes were vaccinated.

Reports of outbreaks of small-pox in other states showed that in numerous instances the disease was introduced by tramps. Several such cases occurred in Ohio. From England, also, where small-pox was widely prevalent at this time, came reports that the tramp was responsible for a considerable number of their outbreaks. At Bradford, England, where several hundred cases occurred, the disease was introduced by a tramp. Hoping to stop, or lessen, this source of danger the local boards of health were communicated with as follows:

OHIO STATE BOARD OF HEALTH,

SECRETARY'S OFFICE, COLUMBUS, O., *February* 28, 1894.

To the Board of Health:

GENTLEMEN: Your attention is again called to the prevalence of small-pox in the United States, and to the recent outbreaks in Ohio.

Within the past month, cases have been reported in our State as follows: Springfield, 1 case; Toledo, 4 cases; Lima, 1 case; Dayton, 1 suspected case, not yet fully determined; Columbus, 1 case.

Small-pox has recently been introduced into a number of places by *tramps.* There are a large number of these lodged nightly in our prisons and jails, and there is considerable danger of the disease being spread in this manner.

It is recommended that your board, co-operating with the council and police, require that each tramp given a night's lodging shall first be examined by a physician to insure that he is not suffering from a contagious disease, and especially from symptoms suspicious of small-pox; and also *that you require him to be vaccinated.* If this rule is enforced by all our cities and villages the danger from this source will be greatly diminished.

Two, and possibly three, of the recent outbreaks in Ohio have been traced to Chicago, and this experience has been repeated in other states; so that special attention should be paid to tramps from that city.

Please telegraph me at once should a case of small-pox occur within your jurisdiction.

We have constantly on hand a small supply of pure, fresh vaccine virus, which will be sent immediately on the report of small-pox, to be used in vaccinating persons who have actually been exposed to the disease.

Respectfully,

C. O. PROBST, M. D., *Secretary.*

Subsequently the Indiana State Board of Health carried this matter even further and issued a mandatory order to local authorities to vaccinate all tramps. There may be some doubt as to the authority to enforce compulsory vaccination of tramps; but as most of them in cold weather present themselves to the authorities for night lodgings, granting this might be made conditional on submitting to vaccination. If such a measure could be enforced in all states the danger from tramps as carriers of small-pox would be greatly lessened.

Several of the outbreaks of small-pox in Ohio were traceable to Chicago. This was also true as regards other states, as shown by their reports.

A meeting of the secretaries of the State Boards of Health of Illinois, Indiana and Ohio was held in Chicago in February, the health commissioner of Chicago being present. The commissioner made a report of the number of cases of small-pox in the city, and the means employed to prevent spread of the disease. These were not altogether satisfactory, and there was reason to fear that Ohio, with her many railroad connections with Chicago, was in some danger from that point. During April and the first part of May, small-pox continuing to increase rapidly in Chicago, it was considered advisable to call together representatives of State Boards of Health of states specially endangered by the epidemic. The meeting was held in Chicago May 9 and 10, 1894, and the following abstract of the proceedings will be found of special interest as dealing with the problem of contagious diseases in "sweat-shops," and the danger from clothing made in such places:

ABSTRACT OF PROCEEDINGS OF A CONFERENCE OF REPRESENTATIVES OF STATE BOARDS OF HEALTH OF

ILLINOIS, INDIANA, WISCONSIN, MICHIGAN AND OHIO, AND OF THE U. S. MARINE HOSPITAL SERVICE AND HEALTH COMMISSIONER OF CHICAGO.

Representatives of the State Boards of Health of Illinois, Indiana, Wisconsin, Michigan, Minnesota, Iowa, Missouri, Kentucky, Ohio, the Province of Ontario, and the Marine Hospital Service, were requested to meet in Chicago, at the Grand Pacific Hotel, Wednesday evening, May 9,

for the purpose of considering the small-pox situation in the United States, but more especially in Chicago, as affecting their respective states.

The call was issued by Dr. Probst, of Ohio, as Secretary of the National Conference of State Boards of Health. The following representatives were present:

Illinois	Dr. J. W. Scott.
Indiana	Dr. C. M. Metcalf.
Indiana	Dr. L. L. Whitesides.
Indiana	Dr. D. C. Ramsey.
Michigan	Dr. Henry B. Baker.
Wisconsin	Dr. J. T. Reeve.
Ohio	Dr. C. O. Probst.
M. H. S	Dr. J. H. Hamilton.

Dr. F. W. Reilly, ex-secretary of the Illinois State Board of Health was present by invitation. Dr. Scott was chosen for chairman and Dr. Probst for secretary.

Dr. Scott stated that Dr. Reynolds, health commissioner of Chicago, had been invited to be present, but was unable to be there.

At the request of Dr. Baker, Dr. Scott made a statement as to the small-pox situation in Chicago. He stated that there had been 1,417 cases of small-pox in Chicago from January 1 to May 9, inclusive. By months the cases occurred as follows:

January, 128 cases. Daily average 4.1.
February, 233 cases. Daily average 8.3.
March, 305 cases. Daily average 9.8.
April, 544 cases. Daily average 16.1.
May 1 to 9, 207 cases. Daily average 23.2.

He said the disease was now prevailing to a considerable extent among the tenement house population, where domiciliary quarantine could not be properly enforced.

Dr. Probst stated that an inspection of one of the infected districts—one in which many sweat-shops were located—was made by Drs. Metcalf, Ramsey, Scott and himself during the afternoon of the 9th, and that apparently the only measure for quarantining infected houses was placarding. Many cases of small-pox were visited without hindrance. In one instance a house, containing eleven families and four cases of small-pox, was entered under the eyes of the police. No restriction was placed on the inmates. There was evidently great danger of infection from clothing made in sweat-shops in this and other small-pox districts.

Dr. Hamilton stated that all vessels leaving Chicago were inspected by officers of the Marine Hospital Service, and vaccinal protection of crews and passengers required.

Dr. Probst recommended a daily inspection of all persons living or working in houses containing "sweat-shops" where clothing is made or finished, such inspection to be made by medical inspectors under the supervision of the Illinois State Board of Health, and suggested that the wholesale clothiers of Chicago would be willing to bear the necessary expense.

It was decided to invite representatives of Chicago manufacturers of clothing to meet the Conference at 2 P. M. of the following day to consider measures to prevent spread of small-pox by means of clothing made in "sweat-shops."

A committee was appointed to invite the health commissioner of Chicago to attend the meeting.

Drs. Hamilton, Baker and Ramsey were appointed to draft a plan for protection against small-pox from sweat-shop clothing, to be presented, after adoption by the Conference, at the meeting with Chicago clothiers. Also to present plans for quarantine, if this should be deemed advisable.

Drs. Probst, Scott and Reeve were appointed to formulate plans for the proper management of small-pox epidemics in large cities.

At a meeting of the Conference held at 10 A. M. on the 10th May, the following resolutions and reports were handed in by the committee previously named, and were unanimously adopted:

Resolved, That this Conference respectfully inform manufacturers of textiles, that owing to the prevalence of small-pox in certain districts of this city, deep apprehension exists in regard to the possible infection of clothing made or finished by persons or families living in the said districts, some of whom are in close relation with the sick, either in the same house, or having free communication therewith;

That in view of these facts, we further inform the said manufacturers that under the circumstances, as above set forth, we shall be obliged to recommend to our several State Boards of Health that no clothing or ladies' dresses for sale be allowed to enter, or be distributed within our respective States, except in accordance with the following measures:

That an efficient daily inspection, with all that such inspection implies, of all places in which such goods are manufactured in the city of Chicago, be established and maintained under the direct supervision of the Illinois State Board of Health, to the end that no such articles from any infected locality shall be put upon the market for sale, or shipment, or be otherwise distributed to the menace of the public health.

The adoption of the foregoing measures will, in our opinion, measurably restore confidence, and facilitate trade, but we desire to point out that the continuance of trade will finally depend on efficient general sanitary operations for the suppression of the disease.

Resolved, That in the opinion of this Conference, strict quarantine by land is at present unnecessary, but the question may well be considered now whether persons from any city where small-pox exists in epidemic form should be allowed to stop in our States without having a certificate of vaccination within the past three years; and that, in

case of establishment of quarantine, all passengers boarding trains should be informed, that unless provided with vaccination certificates from proper authorities they will be liable to examination and vaccination at the State line. Be it further

Resolved, That no vessel plying on the lakes should be allowed to enter any port within the boundaries of our respective States without having on board, subject to inspection, a Bill of Health, duly signed by an officer of the United States Marine Hospital Service.

The following recommendations for dealing with an epidemic outbreak of small-pox in large cities were adopted:

1. The city should be divided into districts containing not more than 10,000 people.

2. Each district should be placed under the supervision of a competent medical inspector with necessary assistants to

(*a.*) Make a house to house inspection.

(*b.*) To successfully vaccinate within the shortest possible time all persons who have not been vaccinated during the outbreak, the first vaccination to be within seven days.

(*c.*) To properly disinfect all houses and their contents where small-pox occurs.

3. Necessary means and appliances for efficient disinfection of materials, premises, etc., should be provided as the exigencies of each district may require.

4. Each case of small-pox should be immediately removed to a suitably constructed and properly equipped and officered isolation hospital.

5. Except in extreme cold weather, hospital tents, as prescribed in the United States Army regulations, floored and warmed, are preferable to the average hospital or private dwelling, and increase the chances for recovery of the patient.

6. Cases of small-pox necessarily detained in their own homes should, with their attendants, be rigidly isolated during the period of danger; and physicians visiting such patients professionally shall be subject to such regulations as may be prescribed by the local health officer.

7. Persons exposed to small-pox contagion should be immediately vaccinated, or re-vaccinated, and kept under observation for not less than fourteen days from the time of last exposure.

8. It is the sense of this Conference that it will be necessary for neighboring cities and states to exclude all persons who come from such city, who are not protected against small-pox by vaccination, and to require proper disinfection of all baggage and merchandise capable of conveying small-pox infection, unless such measures are enforced.

CONFERENCE OF REPRESENTATIVES OF STATE BOARDS OF HEALTH AND OF WHOLESALE CLOTHIERS OF CHICAGO.

At 2 P. M. May 10, the Conference met a committee representing the wholesale clothing manufacturers of Chicago, composed of Harry Hart, of Hart, Schaffner & Mark; E. P. Griswold, of Griswold, Palmer & Co.; Fred Siegel, of Fred Siegel & Bro.; A. Kuh, of Kuh, Nathen & Fischer; H. D. Kohn, of Kohn Brothers; Felix Kahn, of Kahn, Schoonbrun & Co.; S. Spitz, of Spitz, Laudauer & Co., and John Prentiss, of C. P. Kellogg & Co. Dr. Reynolds, health commissioner of Chicago, and Mrs. Florence

Kelley, State inspector of factories of Illinois, were also present. Dr. J. W. Scott, of Illinois, in the chair.

The Chair: This Conference was called at the instigation of Dr. Probst, as secretary of the National Conference of State Boards of Health. At our meeting last night it was decided to issue an invitation to the manufacturers of all articles that are made in sweat-shops, as they are called. I understand that this is a committee to represent the manufacturers of that kind of articles in the city. We have prepared an outline of what we suggest to you, and it is purely with a friendly spirit that we have called this meeting.

Mr. Harry Hart (of Hart, Schaffner & Mark): Mr. Chairman: In behalf of the clothing manufacturers of the city of Chicago, and in behalf of manufacturers of all sorts of textile garments, I would say, we are perfectly willing and anxious to adopt any suggestion which you might think would assist us in stamping out the disease; that we have a great interest at stake, in fact it is our own life, our bread and butter, to see to it that this disease is stamped out here. We will put nothing in your way in the shape of an obstruction to do anything that shall be necessary to stamp out the disease in the city of Chicago. What we do object to is that we should be singled out as perhaps the only single line of interest, that is, line of manufacturers, who are propagating the disease. As far as the clothiers of Chicago are concerned—I can speak for our firm and every clothing firm in Chicago—we have compelled the people who work for us to vaccinate their employes, and we will do anything else that you will suggest that will assist in stamping out this disease.

The Chair: Dr. Probst has had this matter under consideration perhaps more than anybody else present, and perhaps he could give us an idea of the reasons why these particular articles of manufacture are singled out.

Dr. Probst: Mr. Chairman, I do not wish especially to respond to that, but, if it would be in order, and you will permit me, I will submit to the meeting the resolutions that were adopted by our joint conference with reference to precautions that we think should be taken to protect surrounding states and your own State against any danger from infection from clothing sent from this city.

Resolution No. 1 (*vide supra*) was here read.

Mr. Hart: If the Doctor will excuse me for just one minute, clothing in the usual sense means simply ready-made clothing for men's wear. Clothing, as I would understand it, would be cloaks, shirts, anything that is made in textile garments, and if this thing goes out into the newspapers before this article is published, I would suggest to the Doctor that he should embody the whole thing in there. It is no more dangerous to manufacture

clothing in an infected district than it is a cloak or a shirt, cotton or woolen.

The Chair: We do not make this distinction.

Mr. Hart: I should like to hear from Dr. Reynolds.

Dr. Reynolds: Is this intended to act independent of the city government?

The Chair: Not at all, sir. My own idea was that it should be left in the hands of the city government. The object is simply this: These gentlemen are representatives of State Boards of Health, and they insist upon having their authority come from a corresponding authority in the state of Illinois. They insist upon having their information directly from the authority in Illinois that corresponds with the authority they represent in other states. Furthermore, it will bring into co-operation other state officers who already have charge, in connection with the State Board of Health, of this work, namely, the factory inspectors, who are more directly connected with this work even than the local board of health.

Dr. Ramsey: Before it is discussed further, I would move that the words "manufacturers of clothing" be changed to "manufacturers of all textiles."

The motion was seconded and carried.

Mr. Kuh (of Kuh, Nathen & Fischer): I have a suggestion here for this committee, and if you will be kind enough to read it, and find it advisable to adopt it, I shall be pleased to have you do so.

The suggestion was read by the secretary.

Mr. Prentiss (of C. P. Kellogg & Co.): It seems that that is a matter of detail that comes afterwards. The matter now is, whether the State is going to take this matter up, or whether it is the city. It seems to me that it might do great harm to the city. It is a question of authority. Who is going to do this work? If the State is going to do it, who is to pay the expense? It seems to me if the State Board takes it the city board of health can step to one side and let the State Board manage the business themselves. If the State Board will recognize the health officer and the city government, and aid them with what help we can give them to stamp this out, it can be done readily; but if the State is going to assume charge of this matter it will be very great injury to the city.

Dr. Baker: I rise to make the request that each speaker give us the benefit of his personality. I would like to know who each speaker is, so that we may know whom we hear.

Mr. Hart: I would like to have the opinion of Dr. Reynolds, the head of the health department of the city of Chicago.

The Chair: We are very desirous of hearing from Dr. Reynolds, and I wish to assure Dr. Reynolds, and the local health department, that this is not intended to take anything from his authority or control. Dr. Reynolds realizes, I think, that there has been no disposition on the part of the State Board to interfere with his work in any way. On the contrary, I think he knows that the State Board of Health has done everything in its power to co-operate and strengthen his hands whenever it was possible.

Dr. Reynolds: If I am to speak to this resolution, Mr. Chairman, I shall have to hear it read again. If I am to talk in a general way——

The Chair: We should like to hear you talk in a general way first.

Dr. Reynolds: Mr. President, gentlemen and ladies. I was asked this morning by a committee of a meeting held yesterday, to meet with this committee this afternoon. On arriving here I find that you have business with the manufacturers of Chicago. That is the first intimation I have had of that, outside of the morning papers. When the committee waited on me this morning I dictated to a stenographer some things which I supposed the gentlemen present would like to hear. I did not know then that the manufacturers were to be here. Perhaps they would like to hear them also.

Since the year 1851 there have been but four years when there were no deaths recorded in Chicago from small-pox—the years 1858, 1888, 1890 and 1891. In the year 1882 there were 3,611 cases with 1,292 deaths, being the highest number ever recorded. The year previous there were 2,997 cases with 1,180 deaths. Three years in that time—1879, 1886 and 1889—each had one death. There were eight cases in 1892, 140 cases in 1893. During 1894, up to last night, May 9, there were 1,459 cases. Our population in 1882 was 560,639, and in round numbers at the present time it is 1,600,000.

Various times in the history of Chicago small-pox has been found and destroyed. In 1881 and 1882 there was an enormous amount of small-pox compared with the population. We were not then, as now, the focal point for all points of the world, yet it flourished. In 1892 and 1893, in addition to the usual travel centering in Chicago, every known country on the face of the earth had its representatives here. Without question visitors to the World's Fair brought small-pox to our country and to our city. In July last three cases of small-pox were found, each miles from the other, at the same time. Ever since cases have been occurring where it is impossible to trace them to their origin. That small-pox was brought again and again to Chicago, and is still being imported, cannot be questioned. That small-pox has been destroyed again and again in Chicago, we know. Small-pox has not spread in Chicago from houses disinfected by us.

At the present time the entire city is being canvassed. More especially in the vicinities where small-pox is existing, or has existed, with the result that we are now finding many cases that are purposely hidden from us. Vaccination is being practiced now in Chicago at the rate of from five to fifteen thousand per day, and we can safely challenge any municipality in our country, or any other, in this or any other time, as to the quantity and character of this work. So careful are we as to re-vaccination that in one instance vaccination was repeated fourteen times before it was successful.

Our methods for disinfection are with a solution of bichloride of mercury, 1 to 500, and with fumes of sulphur. When we disinfect a house, everything, including woodwork and fabrics of all kinds, is saturated with this solution of bichloride of mercury. The sulphur is burned, three pounds to 1,000 cubic feet of air space, in an iron kettle set down in tubs of water. Such goods as mattresses, where we have reason to doubt that this application may disinfect, we destroy by burning.

That clothing is being shipped from the city, that has been infected, I do not believe, as our method is to either disinfect it or destroy it, or take it and use it for our patients in the small-pox hospital. Our death rate is no higher than in other outbreaks of the disease in the past, but we have been crowded for room and quarters are being created as fast as men and money can do it. By the close of the week we expect to have every case in the city removed and cared for properly. We have a man with a wagon, whose business it is to secure supplies and feed those in quarantine, and I believe it is being faithfully done. Several lodging houses and hotels were infected during the winter, but the disease has not reappeared since we treated the premises.

That is all I have written. Now if our methods were not right in such places as the lodging houses in Chicago, where sometimes five and as high as seven hundred people under one roof are crowded together, if our methods, I say, were not right, we would still be having small-pox by scores in those regions, because there are probably 20,000 people who live in lodging houses in Chicago. Occasionally, since that time, we have taken a man out of a lodging house, but you know they stay there as a rule but one night, maybe somewhere else the next. Secondly, cases have not appeared in houses whence any of those cases have been removed, or any infection from these premises. Our experience shows most conclusively that vaccination is a preventive, and we vaccinated in January 87,500; that is, we paid for that many vaccine points. A few may have been wasted, some may have been used on secondary vaccinations. Since December 1st up to the present time, we have probably used over 300,000

vaccination points. Nevertheless, there are probably thousands still unvaccinated. We have a force of over one hundred people working on small-pox, and it will be a question of but a short time before every one is vaccinated. It must be remembered, however, that there are strangers coming to and going from the city; probably a transient population of ten thousand in our city, maybe far more. That there will constantly be some people who need vaccination, we cannot question.

Mr. Holt: Before the doctor gets through I would like to have him state to the meeting what his plan is in case of finding small-pox where there is any clothing or shirts or any other textile garments manufactured.

Dr. Reynolds: I believe that cotton and linen fabrics can be disinfected in many ways by heat, by being saturated in a solution of bichloride of mercury of sufficient strength. For woolen goods, fumigation and treatment this way may destroy them. The quickest way with them is to burn them.

Dr. Probst: If you will pardon me, I understand the question is not what should be done, but what is being done.

Dr. Reynolds: One firm, where there were some clothes unfinished, sent word to those who were manufacturing them to finish them and turn them over to the department of health. We put them in our small-pox hospital and used them to clothe the patients there. Men came with almost no clothes.

Mr. Holt: Is that the only way?

Dr. Reynolds: No; many of them were destroyed or disinfected. We have the State inspectors, who are, I believe, clothed with authority.

The Chair: Under the law, factory inspectors are obliged to burn clothing, aren't they?

Dr. Reynolds: I was about to say, these factory inspectors are clothed with authority to notify the various boards to destroy goods. When we receive a written notice of that kind from them, these goods will be destroyed. I wish to say further, we are putting men to work as fast as we can find work for them to do, as fast as we can keep the work systemized, and keep them working without being in each other's way. We have about one hundred now. If it needs a thousand, they will be put to work.

The Chair: How about the sufficiency of your quarantine, where you have people in houses that are not taken to hospitals or pest houses?

Dr. Reynolds: I do not believe in treating small-pox in private houses at all.

The Chair: Have you been able to maintain any adequate quarantine under the circumstances?

Dr. Reynolds: At the end of this week we will be able to house them all. We have depended principally upon the police force for quarantine. In most parts of the city this has been effective; as effective probably as any quarantine of this kind can be. Human nature is frail, and people will be negectful, and that quarantine will be air tight I of course have no way of knowing in each individual case. From what I have learned in the past few days about one section of the city, the Southwestern, I know it is not; it has been almost impossible to get a policeman to go near the houses at all. That has been guarded against, and if the cases cannot be removed, we will have to quarantine them with our own men.

The Chair: The State factory inspector, Mrs. Kelley, is present, and I presume would like to say something about the factory law as it affects this matter, and the result of some of the work that she has done in this direction.

Mrs. Kelley: Mr. Chairman, may I ask that the resolution be read once more? We are all speaking to a resolution, aren't we?

The Chair: We propose to get to the resolution pretty soon, but anything in regard to your work as it affects clothing, will be in order.

Mrs. Kelley: I made a small statement this morning of what we have been doing the last few month, which I have addressed to you as Secretary of the State Board of Health.

May 10, 1894.

DR. SCOTT, *Secretary State Board of Health of Illinois:*

DEAR DR. SCOTT: In accordance with your request I subjoin a statement of the action of the State inspectors in connection with the small-pox epidemic in Chicago.

When small-pox first appeared in those streets in which it is now found in juxtaposition to clothing in process of manufacture, the clothing trade was so dull that the most careful inspection failed to find infected goods. This continued to be the case throughout December and January, during which months daily schedules were filed in this office showing continuous searching of the region now so disastrously infected.

During the first week in February, a rumor, which we could not substantiate, reached the inspectors that small-pox was being concealed in one tenement house where clothing was being made, on West 18th street. The accompanying circular was sent immediately to 176 wholesale merchant tailors, and to several hundred of the sweaters. A deputy inspector was detailed to visit every wholesale dealer and obtain a corrected list of sweaters. Another deputy visited sweaters to obtain perfect lists of home finishers. The search for infected garments was kept up unbrokenly.

During the first week in March the deputies reported in one day three cases of disease which they believed to be infectious. I went to the office of the Board of Health, but failed to find Dr. Reynolds. I saw Dr. Garrott and showed him the factory and workshop laws, and asked him to detail a physician to make the diagnosis. He did this but assured me that by order of Dr. Reynolds, the Board of Health would in no way destroy goods.

The law provides that:

"If the Board of Health of any city, or said State inspector, finds evidence of infectious or contagious disease present in any workshop, or in goods manufactured or in process of manufacture therein, and if said Board or inspector shall find said shop in an unhealthy condition, or the clothing and materials used therein to be unfit for use, said Board or inspector shall issue such order or orders as the public health may require, and the Board of Health is hereby enjoined to condemn and destroy all such infectious and contagious articles."

We have in all cases issued the orders to the sweater and the wholesaler, that infected goods must be held for destruction by the Board of Health, and that no more goods must be sent to infected places. But the order of the Board of Health has not always been made formally, in writing, because there is no requirement that it should be so made, and because at first we were certainly justified in assuming that the commissioner was as much concerned as we in obeying the law and stamping out the epidemic. Wherever the notice given to the health department was verbal, instead of written, it was done to save time and to enable the department to take instant action, one inspector standing guard over the infectious goods while another made the report in person to Commissioner Reynolds or Secretary McCarthy. This precaution was early found to be necessary because the sweater would carry back the infected garments to the wholesaler in defiance of orders and to the incalculable injury of the purchasing public. Any excuse on the ground of lack of written notice is, therefore, a confession of bad faith of the health department which has been made thoroughly aware of the circumstances of the case.

Concerning our effort to induce clothing manufacturers to insist upon vaccination of all employes, you are already informed. We have found the manufacturers prompt to comply with every order, except the two firms, H. Marks & Co., 189 Clark street, and Henig, 141 Michigan avenue, who flatly refused to obey the law.

We are, however, constrained to state that the law as it stands to-day affords the purchasing public no adequate protection against small-pox, or any other infectious disease, because the interests of the tenement house worker is wholly in the direction of concealment. Hence neither the Board of Health nor the State inspectors can hope to know the state of health of all the families of the twenty-seven thousand persons engaged in Chicago in the manufacture of clothing in tenement houses. The most efficient co-operation of the Board of Health, the wholesalers, merchant tailors and State inspectors could, under the most favorable circumstances, afford but a partial and inadequate protection of the public health while the tenement house manufacture is tolerated. There can never be any assurance of freedom from infection from this source until tenement house manufacture is absolutely prohibited in the interest of the public health.

This recommendation we shall make to the next Legislature, supported by the records of the present epidemic. Meanwhile I most urgently insist that no work should be given out to any tenement house during the next six months.

We shall continue to fight the epidemic with all the co-operation that we can secure, and shall be grateful for any helpful suggestions that you may be able to make.

(Signed) FLORENCE KELLEY.

During the reading of her address, Mrs. Kelley made the following remarks:

We found nine hundred and fifty shops employing from six to fifteen people each; that is to say, nine hundred and fifty sweat-shops. There are one hundred and seventy-six down town shops, in which the so-called inside hands, the people that work in the first ward, were vaccinated some four to six weeks ago; but the vaccination of the people in the nine hun-

dred and fifty shops I was not clever enough to think about, but when it was suggested to me, Dr. Reynolds sent out a circular, and I believe they are being vaccinated, but nothing was done previously to the people in those shops. They are principally Swedes, Russian Jews and Italians, and we did not find many who had been vaccinated. They have a perfect horror of it.

You will notice there is a clause there which says: "The Board of Health is enjoined to destroy goods upon receiving written instructions from the inspectors." We say: "Now don't take these goods out of the shop," and we telephone to the wholesalers. We have no complaint to make whatever of any lack of zeal on the part of the wholesalers.

If the wholesalers and the doctor and I work together every single day faithfully, we cannot know what is the condition of the thirty thousand working people in Chicago. It would not be honest for us to claim that we did. We cannot. The only way that will, to my mind, prevent sending out infectious goods, is the agreement on the part of the wholesalers that for the next six months they will have goods made in their factories, or that they will not have them made at all. We cannot guarantee that any tenement house is clean.

Mr. Kuh: The statement made by Mrs. Kelley I am satisfied is correct. I am likewise satisfied that Mrs. Kelley and her board have done all in their power, as well as the health officer, and at the same time the manufacturers of Chicago have not done their duty as they ought, and I think the manufacturers could assist our health officers to a very large extent by uniting with one another. What I mean to say is this: That we positively refuse to employ tailors or any one of their assistants or employes without their being vaccinated, and I think in that manner we might be able to stamp out the disease. Now the question comes, it will require a great many more assistant inspectors, and I presume it will require a great many physicians. Now for instance, our firm may have a dozen shops, or a hundred of them. In this resolution I say that every clothier shall be required to send a representative with an inspector or physician to see that the people in those shops are vaccinated, under the threat of discharge. I am positive that any employe of ours, or anybody else, for fear of being discharged, will submit to vaccination, and I think if everybody is vaccinated in these shops that the disease can be rooted out.

Mr. Kohn (of Kohn Brothers): Mrs. Kelley, in speaking of the manufacture of clothing for the next six months, says, that none shall be made in homes; I suppose she means of the workman.

Mrs. Kelley: Tenement houses.

Mr. Kohn: I would like to ask Mrs. Kelley where she would have them made.

Mrs. Kelley: Every other form of manufacture in Illinois, except this one of garments, is carried on in factories, and in the name of the public health that ought to be.

Mr. Kohn: I would like to ask Mrs. Kelley if within six months, it would be possible to arrange for the wholesalers and their employes so as to enable them to provide facilities sufficient, both as regards room and sanitary appliances and anything else that may be necessary to do the work. I wonder if Mrs. Kelley realizes the amount of clothing made in Chicago? I do not refer particularly to men's clothing; I mean everything that is made. Of course I am not personally posted as to how much is made in what is called sweat-shops. I suppose there are grades of that kind of work, some very bad, and from that degree they go up, perhaps, to some satisfactory to everybody. So far as making clothing in shops is concerned, is there not just as much danger in the workingman bringing infection from his own home, if it is not sanitary,, if he is not vaccinated, if everyone in his family is not vaccinated, to a shop in which he may be employed, as there is danger of small-pox in the sweat-shop itself where every one is vaccinated?

Mrs. Kelley: In answer to those two questions I would say that I think I have a very fair appreciation of the vast quantity of clothing made, when I have, as I said, a schedule of nine hundred and fifty different sweat-shops, and when we have between twenty-seven and thirty thousand home workers on our list, actual addresses furnished us by the wholesalers and by sweaters. But I do think, in the interest of public health, the manufacturers are in duty bound to make every effort to supply themselves with such factories as other manufacturers have, and if they cannot, I think they ought to slacken up a little bit until they can. As to the second question, as to the danger; in the first place, if one man goes from a tenement house to a factory there is one chance of his carrying infection from whence he comes. The majority of tenement houses in which the garments are made are very large, three buildings on a city lot, four, five and six stories high, crammed with tenements. There is absolutely no possibility of quarantine where there is a case of small-pox. The water closets are used in common, the stairway is used in common, The passage way along the halls and to the street is used in common, and the children play together all the time; and if a garment goes there there is a chance of infection from every tenant in the house. If the workers go to the factory there is one chance of his carrying infection with him. (Applause.)

Mr. Kohn: While Mrs. Kelley's remedy perhaps may be effected in time, she suggests that some of the largest industries here practically stop working for six months. During that time the prowess of Chicago will be lost, the employment of a great many thousand people will be lost.

The Chair: This is a very interesting subject for discussion, but it is getting away from the business in hand.

Mr. Kohn: I would like Mrs. Kelley's definition of a sweat-shop.

Mrs. Kelley: The English Commission on Labor which examined the sweating system for several months declared when they got through that they had eighty definitions, any one of which would be suitable; but that they thought the best definition was a room in a tenement house in which a man worked upon garments that did not belong to him, for which he received compensation from their owner and returned to their owner. And that is what I understand exactly by a sweat-shop; and that a sweater is a man who lives in the tenement house, or who has his shop on the same lot with the tenement house, who takes goods from a manufacturer and returns them.

Dr. Probst: It seems to me this discussion will go on interminably unless we bring it to a focus. I think it is proper that we should consider the resolution presented by the Conference. The plan was that every so-called sweat-shop should be inspected daily. The idea, of course, is that if there is a case of sickness in that house it will be discovered at once, and all precautions taken. Such a plan was carried out and found practicable in Cincinnati in 1882, when they had an epidemic of small-pox in that city. The Kentucky authorities came there and proposed that they would not allow any clothing to come into Kentucky. A meeting similar to this was called. The clothiers agreed to pay the expense of an inspection that would be satisfactory to the authorities of Kentucky. They placed this inspection in charge of a physician who worked in entire harmony with the local board of health. They had a list of every sweat-shop and every inmate of the house. They were visited every day by a medical man and the inmates all came up and were examined, to see that no one was sick. This daily inspection was carried on during the epidemic. I do not think it necessary that we should attempt now to stop the sweat-shop system of making clothing in Chicago; an examination of these shops by a competent man ought to make us feel safe.

Mr. Hart: I perfectly agree with what Dr. Probst has said. I think if a daily inspection were to be required of each shop in the city where there is manufacturing of either men's or women's clothing, and it was found that no disease was there, it would be perfectly satisfactory to have the clothing go out among the people of the different states. In regard to shutting up the nine hundred shops, as Mrs. Kelley suggests, it would

simply kill the industry of the city. It might suit her very well to have the industry killed, but at the same time I do not think the city of Chicago would be helped.

Mrs. Kelley: It has not killed the shoe industry.

Mr. Hart: Shoes are different from clothing. The whole trade would have to be revolutionized. I move the previous question on the resolution of Dr. Probst. I move that it be adopted.

Dr. Ramsey: I do not think this Conference has any idea of stating where clothing or textile garments of any kind shall be made. The only idea is to make it safe to be shipped into our states. I think the resolution covers that.

The Chair: Before this resolution is put upon its passage allow me to say that this is a demand made upon the Illinois State Board of Health without any previous knowledge on my part. I cannot say that the Illinois State Board of Health will guarantee this. I have never pledged myself to assume it. I have never pledged the Board to assume it. I have no doubt if the manufacturers express a desire that the State Board of Health, in accordance with established regulations between State Boards of Health, should act, through whatever inspectors they may see fit to endorse, merely making itself responsible for the assurance that goes out, that it will do so.

Dr. Baker: I rise for the purpose of asking a few questions. Dr. Reeve has asked me to vote on this question. I would like to have, before this vote is taken, the names of the manufacturers represented here, and then let us understand who votes, and those of us from abroad of course refrain from voting. We have had our say. We have made our proposition. What we wish to hear from, I think, is the manufacturing interest here in Chicago.

The Chair: How many manufacturers were represented at the meeting this morning that appointed this committee of nine?

Mr. Holt: The entire clothing industry is represented. Those who were not there will come in.

Dr. Baker: One more point, and that is, suppose this plan, which has been read here, is adopted, who pays the bill? Is the Illinois Board of Health prepared to meet the expense, or does this vote that is taken here pledge the manufacturers themselves to meet the expense?

Mr. Kuh: That is the very question I asked Dr. Reynolds and Mrs. Kelley. I do not know whether you propose to adopt the suggestion which I made about the doctors. Who is going to pay the expense? Who is going to pay the additional inspectors? Who is to engage additional physicians if the resolution should go through?

Mr. Hart: I have just been asked whether the manufacturers of Chicago would be willing to pay for this inspection, and I said in behalf of the manufacturers that I thought they would be.

The Chair: Dr. Reynolds has been spoken for on this matter, but he has not spoken. I would like to hear whether Dr. Reynolds has any objection to this method of having reports authenticated to boards of health by the Illinois State Board of Health.

Dr. Reynolds: Not in the least.

Mr. Spitz (of Spitz, Laudauer & Co.): Allow me also to say that the clothing manufacturers do not want the impression to go abroad that they have done nothing until now to prevent the spread of small-pox. Individually, for the past three or four weeks, they have done all that they possibly could to have their employes vaccinated, to have certificates sent to them from the different shops. They have sent men from their stores, who have inspected the different shops and have brought back word whether, in that vicinity, small-pox prevailed or not; and this impression should go abroad among these different gentlemen who are representing the State boards, that the clothing manufacturers of Chicago have already used every precaution in their power to allay this disease, and send clothing forth that has been made in shops free from disease.

Mr. Prentiss: I cannot speak for the other clothing manufacturers in Chicago, but for the one I represent I do not believe there has an article of clothing gone to a sweat-shop as defined by Mrs. Kelley. We are sending our clothing to reputable shops. We do not send clothing to tenement houses to our knowledge. If any case is brought to our knowledge of that kind the clothing is taken away from them; in fact, I do not think it has ever been. If there are nine hundred sweat-shops of that character, how many reputable shops are there? Mrs. Kelley does not state that.

Mrs. Kelley: There are none.

Mr. Prentiss: If that is so the clothing men had better resolve to stop manufacturing clothing and throw these people that are doing work out of employment, and I for one would be in favor of that. And I would ask the gentlemen with me that not another garment should go out of our shops after to-day.

The resolution was again read.

Dr. Reynolds: May I say one word? That is, when these men are employed, as these State inspectors have worked so well in the matter and know where all the shops are, I think the men ought to work under their direction. I think it ought to be perhaps so understood in advance.

Dr. Baker: In co-operation with the State factory inspectors?

Dr. Reynolds: That they direct the work, because they are the ones who know where the shops are. Of course they come directly under the city department of health. When they find any clothing we are supposed to destroy it. They come under our observation as well. These men can communicate with the State Board of Health, and the State Board of Health can send out any communications they receive.

Mr. Prentiss: Do I understand this takes it entirely out of the hands of the city, the work of exterminating small-pox, and places it under the supervision only of the State Board of Health?

The Chair: Allow me to assure you personally that there will be no antagonism between the State Board of Health and the commissioner of health of Chicago. I think Dr. Reynolds is thoroughly satisfied that that is so.

Dr. Reynolds: It is not possible to take it out of the hands of the department of health. The department of health is working under laws and ordinances, both State and municipal, that are broad. There can be no objection on my part nor on the city's part to having these men report. Of course they must report to me when they find contagion, and there is no objection to their reporting to the State Board of Health. We do, too. That makes a short cut to the State Board, and they can communicate with other boards. So far as the city is concerned, I want it understood that the city understands that it is to destroy contagion wherever found and of whatever kind.

Dr. Baker: May I supplement what Dr. Reynolds says by suggesting another idea? That as eventually this is to satisfy the State of Michigan, the State of Illinois, the States of Wisconsin, Indiana and Ohio, the details of this plan should be submitted by the State Board of Illinois to these surrounding states, and preferably in advance so that they may find out whether or not it is satisfactory. I make that suggestion as some of us have been considering for a considerable time quarantining against Chicago. Quarantining against Chicago is a large undertaking, especially for a State like mine, with so long a seacoast, as we have too many points to guard. Still the life and health of our people are of that consequence that under some circumstances, of course, we will quarantine against Chicago. The measures taken here have a bearing on our action, not only in Michigan, but in Wisconsin, Ohio and Indiana, so that before this plan is finally started, or when it is started, it seems to me we should expect to have notice from the Illinois State Board of Health as to the exact plan.

The question was called for.

The Chair: As I understand it, this is a question for the committee representing the manufacturers to decide. We have submitted the proposition; we have nothing to do with voting on the question. It is

simply whether the manufacturers will accept the proposition submitted, provided it can be completed and carried out as suggested, and I have no doubt it can, in conjunction with the local health officers of the city of Chicago.

Mr. Hart: Do I understand that this work is to be done under the immediate supervision of the local health officers?

The Chair: The State Board of Health of Illinois is held responsible, as I understand it, for the reports that go out from this city, as to whether or not any of these articles of clothing have been exposed to any contagion. You know what that means as well as anybody else. You know if the State Board of Health assumes that responsibility it must have some say as to how this work shall be done. Nobody questions Dr. Reynolds' authority in this city, and Dr. Reynolds and I understand each other; if we do not, we will before we get through.

Mr. Prentiss: As one of the members of that committee, I will express myself as desiring to co-operate with the State Board and the city, and do anything that is possible to prevent the spread of the disease of small-pox, and I will vote favorably for that resolution.

Dr. Reynolds: In the paper submitted by the manufacturers here, I find this suggestion: "The manufacturer, however, to be furnished with a certificate from an inspector that the work has been fumigated before he shall accept the same." Now, I think, it would be well to have these inspectors furnish these manufacturers a certificate that the goods are free from contagion, or are disinfected, or destroyed, or what has become of them.

The Chair: As this resolution that is presented treats of placing goods in trade as well as shipping them out of the city, I think it would be perfectly right to have it appear in that resolution, that a certificate also be furnished to the manufacturers for their defense. They are entitled to something out of this. They are paying the expense for the additional work.

The resolution originally proposed was then read as follows:

"That an efficient daily inspection of all places in which said goods are manufactured in the city of Chicago, be established and maintained under the direct supervision of the Illinois State Board of Health, to the end that no such articles from any infected locality shall be put on the market for sale or shipment, or be otherwise distributed to the menace of the public health."

Mr. Hart: I would like to make one suggestion, and that is in saying that the inspection shall be under the supervision of the State Board of Health in conjunction with the city board of health. I think that would cover the ground still more thoroughly. The State Board and

is done largely to allay fear abroad. The city departme
hin the corporate limits of Chicago, and the State Board h
ters, and it is all right and proper to read as it is. While
I will also say that when these inspectors inspect shop
pect employes and follow them to their homes.

Dr. Reilly: There is a good deal of useless discussion.
d it, our object is first to protect the public health, and s
y less important, to protect commercial interests. This wh
certificates has been definitely abandoned by every repr
te boards of health here. You do not want your goods t
ificate and marked free from small-pox. You do not war
ression that contagion is so general that goods must be
n it. It will throw suspicion on the goods. The more
be done the better. It can be done here as in Cinci
rantee for the adjoining States is the guarantee of the St
lth. It will be Dr. Scott's duty to formulate a plan for
be submitted to the representatives. It must be accep
e boards of health. In doing that, he will naturally cor
nolds and Mrs. Kelley. He will naturally confer with rep
anufacturers. Now the whole matter rests in his hands
plan, to submit it to these gentlemen for their accep
't want a certificate. You don't want it heralded to th
clothing of Chicago is of such a suspicious character
ify to its purity. (Applause.)

Mr. Hart: In behalf of the manufacturers of Chicago, w
lution, and we shall see to it that a sufficient number
appointed and paid to inspect all the work that we are

SMALL POX IN OHIO.

The following is an abstract of the reports of the various outbreaks of small pox which occurred in Ohio during the year, as presented to the State Board of Health at its quarterly meetings:

WEST WILLIAMSFIELD.

The township health authorities, in October, reported that a child in a family living near West Williamsfield, Ashtabula county, had small-pox; that quarantine had been established, and proper precautions were being taken. The attending physician reporting on the origin of the disease stated that there had been no exposure to small-pox, and that the case undoubtedly came from vaccination. Further inquiry made it practically certain that the case was simply vaccinae, with a general eruption which occasionally follows vaccination.

HARROD.

A similar case, but of more interest, occurred in Harrod, near Lima, Dr. Kahle, a member of the State Board of Health, investigating it. A child, following vaccination, presented the vaccinal eruption. An infant in the family, which had not been vaccinated, later had a similar eruption, and this gave rise to the report that the disease was small-pox. Dr. Kahle, after investigation, reported that the infant had been accidentally inoculated with vaccine virus by the child first having the eruption, and who frequently nursed it. The eruption was therefore of vaccinal origin in both cases. A number of cases of vaccinal eruption were reported during the year.

COLUMBUS.

The first real case of small-pox occurred in Columbus, and was reported December 1, 1893. An Italian called at a physician's office for treatment. The physician telephoned me that he feared the man had small-pox. I instructed him to report to the local health department at once, and see that the man was taken home and guarded until the health officer took charge of the case. The man gave a false address, was allowed to go without watching, and disappeared. Diligent search was made for him several days. I spent a day in hunting up Italian quarters outside of the city looking for the man, but he was never found.

December 18, Dr. Kinsman, health officer, reported a case of small-pox in a child living in a house on the west side of High street viaduct. On the following day I saw the case with him, and was doubtful about its being a case of small-pox, but as Dr. Kinsman was of the opinion that it

was, and the attending physician had so pronounced it, I concurred in the advisability of maintaining quarantine. Quite a number had been exposed to the patient—a child of probably three years—and as most of these were not hunted up and vaccinated, as they should have been, and yet none of them contracted the disease, my opinion that it was not small-pox has been strengthened.

A case of small-pox was reported on West Town street, this city, ten days ago, about January 16, in a babe a few days old. No known source of exposure. The local authorities promptly quarantined the case, and there have been no other cases reported.

The next case in Columbus, Frank Rose, was reported sick February 24. He was a railroad engineer running into Chicago, and is suspected to have contracted the disease in that city. He was taken sick in a boarding house on East Gay street about the 18th, and was removed to St. Francis Hospital the following day, the nature of his disease not being suspected. He was taken to the small-pox hospital on the 25th and died there March 2. Those in St. Francis Hospital who had been most exposed to the patient were vaccinated, and the inmates were held in quarantine for a few days only.

Herman Donavan, who was in the ward with Rose in St. Francis, and who had been unsuccessfully vaccinated, was found sick with small-pox March 11 in a stable in the central part of the city. He was removed to an improvised pest house, a tent (the building occupied by Rose having been destroyed by fire), on the following day. He was discharged April 12. Undoubtedly he contracted the disease from Rose.

March 14, Charles Saunders, living on East Mound street, was reported as having small-pox. He was quarantined at home, and discharged March 31. Origin of the disease unknown.

April 9, Dirk Evans, colored, was found sick with small-pox at Dr. Evans' office, where he had gone for treatment. He was removed to the pest house (a new, permanent structure having been built) the same day. He was discharged April 21. Origin of disease unknown.

March 31, Charles McClusky and John Benninger, inmates of St. Francis Hospital, were reported sick with small-pox and were removed to the pest house April 2.

As these cases could not be attributable to exposure to the Rose case, removed from St. Francis February 25, it was evident that infection lingered in the hospital. I learned that the mattress upon which Rose had slept had probably been retained in the hospital, and had not been disinfected. The following communication was sent to Dr. Kinsman, health officer of Columbus:

April 2, 1894.

DR. D. N. KINSMAN, H. O., *Columbus, Ohio:*

DEAR SIR: I have been acquainted with the fact of a second outbreak of small-pox in St. Francis Hospital, and that a large number of inmates have been exposed to the disease.

When the patient, Rose, suffering from small-pox, was taken from St. Francis some weeks ago other inmates who were exposed to him were confined to the hospital for but a few days, and as a result one of them came down with small-pox in the city.

I am reliably informed that the mattress on which Rose lay, while in St. Francis, was not destroyed, but was simply aired. There is also some doubt as to whether the clothing of Rose was destroyed. This suggests the probable origin of the cases just reported.

I would strongly urge that all inmates, nurses, etc., be rigidly excluded from the public for not less than fourteen days from the time of last exposure, and would suggest that guards will probably be required to enforce this order. I would also urge that a trusted agent of your department be instructed to destroy all bedding and clothing used by the two small-pox patients. In this connection I beg respectfully to remind you that Rule 26 of the Rules and Regulations of the State Board of Health, makes it the duty of the health officer to immediately notify the Secretary of the existence of a case of small-pox, cholera, yellow fever or typhus fever occuring within his jurisdiction. I have not, to this time, been officially notified of the occurrence of small-pox in Columbus.

Respectfully,

(Signed) C. O. PROBST, *Secretary.*

A conference followed this letter, and the hospital was quarantined with guards for fourteen days. The inmates were vaccinated by the health officer.

April 16, Alice Terry, inmate of St. Francis, was reported sick with small pox, and was removed to the pest house about the 18th. The hospital was not again quarantined.

The last case reported in Columbus was a student at the State University named C. L. McIlvaine. At the request of Dr. Kinsman, I saw the patient on the morning of May 30, at his boarding house on North High street, and pronounced the disease varioloid. The patient was removed to the small-pox hospital the same afternoon; the inmates of the boarding house were vaccinated, and ordered by the health officer to remain in doors fourteen days. The patient had been vaccinated when a child and presented two faint scars.

The patient, I learned, had left Columbus on Friday, May 25, and had gone to Cleveland, and from there to Geneva. He was taken sick the following day, and returned to Columbus on Tuesday, May 29, going on arrival direct to his boarding house.

Some alarm was created over the matter at the University, which led to a large number of students being vaccinated.

There were altogether eleven cases of small-pox in Columbus, with one death.

SPRINGFIELD.

Saturday, January 20, a tramp from Chicago came to Springfield and stopped at a mission where he lodged till the following Monday. He was taken sick Sunday, and was sent to the general hospital Monday morning. On Wednesday the disease was pronounced small-pox. I was called there Thursday, the 25th, by the health officer; visited the patient and found him in the pustular stage of small-pox. I met the board of health, urged immediate vaccination of all exposed persons (this had been partially done) and the enforcement of vaccination of all school children. An order to this effect was adopted by the board on the 26th, and also a resolution urging all citizens to be vaccinated, and especially requesting proprietors of factories, shops, etc., to insist upon the vaccination of employes. The patient was removed to the infection hospital on the 26th. The inmates of the general hospital were quarantined fourteen days, and though many of them were intimately exposed to small-pox, none contracted the disease. The patient recovered, and no other cases occured.

SHELBY.

January 30, Dr. I. A. Myers, of Shelby, wired a report of a case of small-pox four miles from that village. I telegraphed the township board to take charge of the case, giving instructions. The board had not been organized, but an organization was effected at once. All exposed persons were hunted up and vaccinated, and were held in quarantine fourteen days. I learned that the patient, Mrs. Mary Bloom, had been in Cleveland from January 9 to the 25th; source of exposure there unknown. She came to Shelby via the Big Four Railway on the 25th, and was sick at that time. She came in coach No. 27. Mr. Ingalls, president of the Big Four Railway, was requested on the 31st to have this car disinfected at once. He replied, same date, saying it would be done immediately.

The patient had been staying at No. 321 Franklin avenue, Cleveland. Dr. Leick, health officer of Cleveland, was so informed and reported that the family in which the patient had stayed and also the neighbors had been ordered vaccinated. He telegraphed: "Woman had well marked rash when she left Cleveland. Advise as to quarantine." I advised quarantine for fourteen days from last exposure, and this was enforced.

Full instructions were given the township board of health for disinfection, which was carried out on recovery o the patient. No other cases occurred.

TOLEDO.

Small-pox was reported in Toledo February 6. The first case, John Wintermantle, was working in a factory on the corner of Superior and Oak streets when taken sick, and went immediately home, so there was no great exposure, with the exception of the members of his family and three others. These were vaccinated and quarantined fourteen days. Origin of the disease unknown.

The second case, Mr. O. I. Ferrel, was reported February 7, and he was removed to the hospital on the 8th. This patient had been about for several days after the eruption appeared, and many people must have been exposed to him. On becoming more seriously ill he went to a brother's in Auburndale, where he was found. Origin of this case unknown. This family was vaccinated and quarantined. The father and son, who had been exposed, were taken to Auburndale, vaccinated and quarantined. A store and barber shop, in which the patient stayed, were fumigated.

The son, D. J. Ferrell, who was removed to Auburndale and quarantined there, developed small-pox February 20, having been vaccinated too late for protection. He was removed to the hospital on the 21st On this day, Thomas Barns, who, it was learned, had been exposed to the first Ferrell case, was reported ill. He was found in a doctor's office, suffering from small-pox at the time, and was removed to the hospital. Vaccination and disinfection were carried out thoroughly in this case.

The four cases all recovered, and were discharged from the hospital in March.

April 9, another case of small-pox was reported. The patient, W. A. Gains, colored, had recently returned from California and Texas, coming via Chicago and Cincinnati. Origin of disease unknown. The health officer reported that the patient was found lodging at 1607 Canton avenue, "among a loose aggregation of his own color." They were vaccinated and quarantined. The patient was removed to the pest house.

A man who, unknown to the authorities, had been exposed to this case was sent to the workhouse and there developed small-pox. He was removed to the hospital and the workhouse quarantined. An inmate of the Canton avenue house—Edward Bass—was vaccinated successfully, it is claimed, but fifteen days afterwards came down with small-pox. He was removed to the hospital where he died May 7.

At this time men were engaged to enlarge the contagious disease hospital. Care was taken to prevent the workmen from coming in contact with small-pox cases, but one of them contracted the disease. He was taken to the hospital May 19, and died May 28 of hemorrhagic small-pox.

On May 30, a tramp from Chicago was found with small-pox, and was taken to the hospital. He was discharged June 23. No other cases have occurred in Toledo.

There were in all nine cases in Toledo, and of these two died.

LIMA.

February 21, the health officer of Lima telegraphed, "One case varioloid here, house quarantined." In answer to inquiry as to the origin and precautions taken, he wired, same date, "Toledo, probably; am vaccinating all persons exposed."

The patient, Harvey Neff, was a railroad engineer, running into Toledo. Domiciliary quarantine was instituted, and no other cases resulted. The patient recovered.

The health officer of Toledo was notified that the case was suspected to be traceable to Toledo. The health officer of Lima could furnish no facts to support this conclusion, and the Toledo authorities were unable to trace exposure in that city.

DAYTON.

February 24, a man who had just completed a thirty-five days' sentence in the workhouse, was found suffering from what was supposed to be small-pox. The health officer reported that during his stay in the workhouse, another inmate had a similar eruption two weeks before the eruption appeared on Donnahue, the patient. The patient was sent back to the works, and the inmates vaccinated. The health officer subsequently reported that the disease was chicken-pox. No other cases of chicken-pox or small-pox developed.

WORTHINGTON.

March 11, I was called to Worthington, eight miles north of Columbus, by Dr. Johnson of that place, and asked to see a suspected case of small-pox near Worthington.

The patient, Sarah Elison, had been sick for a week, and the township board of health had quarantined the house. The disease was probably small-pox, though the diagnosis was a little uncertain. I vaccinated the inmates and sent word to the trustees to continue quarantine.

The village authorities of Worthington organized a board of health, and quarantined two persons who had been exposed. Origin of the disease unknown. No other cases resulted; the patient recovered.

VINTON.

March 18, a case of varioloid was reported near Vinton by Dr. Hamilton. The patient, George Eagle, who lived in Vinton, was taken sick at

his brother's in the country, in a house well isolated. The inmates were promptly vaccinated, and the physician established quarantine. The patient had been to Pittsburg two weeks before, and reported that the hotel in which he slept was across the street from a house from which a case of small-pox had been removed the day before he arrived. No other source of disease known. The patient recovered, and no other cases resulted.

LORAIN.

A telegram was received from Dr. Cox, health officer of Lorain, on April 3, reporting a case of small-pox in a tramp. In answer to a telegram for particulars he replied, "Probably two hundred exposed; tramp has been traveling between Sandusky and Fremont; been in Lorain one week. Part of exposed people have been vaccinated. We have no pest house; tramp is in shanty belonging to railroad; have had orders to remove him and have no place to put him; been sick nearly a week but had no doctor until last night. Answer at once."

To this I replied that the board of health had authority to erect a pest house. He then wired to know what authority they had to seize land against the protest of owners. This brings up an interesting point. The statutes provide that the board of health may establish quarantine grounds, and nothing is said as to seizing land, except that any corporation is authorized to purchase grounds for such purpose.

This same question recently came up in Columbus. The building used for a pest house was burned. When the second case of small-pox occurred the authorities decided to use a tent, and located it on the West Side, against the wishes of the people in that vicinity. Before the patient could be taken there they succeeded in getting a temporary injunction against it; but while hunting the health officer in order to serve the papers on him, the patient was placed in the tent, where he remained until a permanent pest house was built.

I consulted the Attorney General in regard to the Lorain case, but he could find no authority in the statutes for peremptorily seizing land for a pest house. Going to the constitution of Ohio he found warrant for so doing "In time of war or other great public exigency." With his permission I telegraphed the health officer, as follows: "Attorney General holds under Section 19, Article 1, constitution of Ohio, Board can seize and hold land for pest house within corporation. Act at once."

On April 4, while in Cincinnati, a telegram was received from the health officer of Lorain requesting me to come there at once. I left that night and reached Lorain the following afternoon. The patient had been

removed to a pest house located at the edge of the village before I arrived. The owner of the land, however, notified the health officer that he would sue for $2,000 damages. The health officer desired a conference in regard to quarantine and other matters.

The origin of the disease was unknown. The patient was found by the health officer in a switchman's house, and was then in a pustular stage. Twenty-one school children had been in or near this house, looking at the man. Fortunately they had all been vaccinated under the general vaccinnation order. It may be stated, parenthetically, that while there were many anti-vaccinationists in Lorain when this order was being enforced, there were none at the time of my visit. The patient had slept a night or two in the water works pumping station, and the engineer had taken him home on one or two occasions to feed him. He was sick at the time. This family was quarantined, and also two other persons known to have been exposed. They were also vaccinated. The twenty-one school children were told to remain at home, but were not quarantined. I advised that they be examined daily by a physician from the eighth to the fourteenth day following exposure. This was arranged for. On the 16 h instant the health officer telegraphed that the engineer had developed varioloid. As he was quarantined at the time there were no additional exposures. Both patients recovered and no other cases developed.

CLEVELAND.

Six cases were reported in Cleveland during the year. Several attempts were made to obtain full reports of these cases from the health officer, but without avail.

COLLINWOOD.

June 24, a case of small-pox was reported at Collinwood. The patient was a child three years old named Ruth Bennett, who came to Collinwood with her parents on June 24, 1894. She was taken sick about June 19. The child and her parents spent one day in Chicago, June 8, and it is possible that she contracted small-pox in that city. The mother and father of the child contracted varioloid while in quarantine, the cases being exceedingly mild. All recovered. Proper measures for disinfection were carried out and no other cases occurred.

LUCKEY.

On my way to Bryan, where I was called July 3, I stopped in Toledo and met Dr. Woods, the health officer. Dr. Woods had written to me a few days prior to this time, asking whether I deemed it wise for Toledo

to quarantine against Detroit on account of the prevalence of small-pox there. The day his letter was received, I telegraphed the health officer of Detroit for a report of the small-pox situation. He replied that they had twenty-six cases, all properly quarantined. I advised Dr. Woods by letter not to attempt to quarantine against Detroit, as Toledo's safety depended mainly upon what the Detroit authorities were doing to confine the disease. Dr. Woods went to Detroit June 30. He reported to me that he found twenty-six cases of small-pox there, four deaths having occurred. He was well satisfied with the methods being taken to suppress the disease.

He called my attention to a case of small-pox at Luckey, Ohio, and said his assistant had been to Luckey and reported that proper precautions were not being taken. I went to Luckey July 3, and met the attending physician, Dr. Peabody. With him I visited the patient and obtained the following history of the case:

The patient, Henry McGale, came to Luckey from Lenawee, Michigan, June 7. He remained at the Merchant's Hotel in Detroit over night on either the 5th or 6th of June. On coming to Luckey he stayed with the family of Mr. McGin, who formerly lived in Lenawee. This family consisted of the father, mother and three small children. About ten days after his arrival, McGale was taken sick. It being learned that a case of small-pox had occurred in the Merchant's Hotel about the time he was there, small-pox was suspected. The matter being reported to the Toledo health officer (Luckey is in Wood county near Toledo), Dr. Lyle, assistant health officer, was sent to examine the patient on June 22. He pronounced the disease measles. On the 25th of June, Dr. Peabody, of Luckey, was called in, and also the township health officer, Dr. Noble. The disease was diagnosed small-pox, and the patient was quarantined; but the other inmates of the house were not strictly confined. Dr. Lyle saw the patient again June 30, and agreed that the disease was small-pox, but maintained that it was measles when he first saw the case.

I crawled through an upstairs window and examined the patient. He presented a well marked case of small-pox, and had never been vaccinated. A male nurse from a neighboring house, a foreigner who could not speak English, was with him.

I then visited the three children of Mr. McGin, who were reported sick. They were all in bed, with marked symptoms of measles, the photophobia, excessive lachrymation, cough and typical rash of measles being present. Two of the children were taken sick June 30, and one on July 1. I saw them on the 3d. Upon close examination one child presented about a dozen vesicles pointing through the measly rash. My diagnosis in this case was small-pox and measles. I was in doubt about

all-pox. The McGin family were all vaccinated on
essfully, with the exception of Mrs. McGin.
n I succeeded in getting a meeting of the township
l they agreed to employ quarantine guards, fence up
sing the house, and hire Dr. Peabody to treat the

Bryan on the 5th, I again stopped at Luckey and
The child found in the beginning of the vesicular
n the 3d was now covered with vesicles, some of them
vo other children, with the exception of slight cough
in, were well. These children and their father were
also attempted to vaccinate the family of the nurse,
ed to do so, so they were quarantined.
Peabody reported that another, the second, McGin
and that the other one was having a high fever. On
child broke out with the disease. The vaccination
e., did not "take" with any but the mother. Two
semi-confluent small-pox; the other varioloid. All of
ed. Quarantine was maintained the proper length of
house and its contents had been disinfected.
secretary of the Michigan State Board of Health in
of small-pox reported at the Merchant's Hotel in

VACCINATION.

At the meeting of the Board held in October, 1893, a rule was adopted requiring all school children to be successfully vaccinated. The order met with considerable opposition in many parts of the State, and a special meeting of the Board was held December 7, 1893, to consider the matter. At this meeting it was decided to postpone enforcement of the order until after the Christmas holidays, *i. e.*, to January 8, 1894. Subsequently, for reasons given below, the order was indefinitely suspended.

The rule requiring the vaccination of school children was adopted by virtue of authority granted in an act passed March 14, 1893, which authorizes the State Board of Health to make orders and regulations for the prevention of contagious and infectious diseases, and requires local authorities to enforce such regulations.

At the time of adopting the order there was every reason to fear that small-pox would prevail in this country to a wide extent, and Ohio was specially endangered by the prevalence of the disease in many localities in Pennsylvania, in Chicago, Illinois, and by its presence in the contiguous States of West Virginia, Kentucky and Indiana. One outbreak of the disease in Darke county, Ohio, which threatened the State on account of the numerous exposures which had taken place before the State Board assumed control, had just been brought to a successful termination, and a second outbreak had been reported in Ashtabula county.

It was a fact well known to the Board that a comparatively small number of school children were vaccinated, except in communities where the boards of education had taken advantage of the law authorizing them to provide for vaccination of school children. Reports from health authorities of 315 cities, villages and townships, giving a school enrollment of 116,966, show that in the territory represented but 24,224, or nineteen per cent. of the school children, were vaccinated prior to 1893.

A few weeks after issuing the order notice was received from several of the boards of health of important cities that their legal advisors had instructed them to not enforce the order. About this time considerable opposition was manifested by the school authorities, the chief alleged objection being the interference with school attendance and consequent interruption of examinations to be held just prior to the holidays.

It was to have been expected that considerable opposition to vaccination would be encountered, but probably the Board was unprepared for so general a refusal to comply with the order. Especially was this met with in the rural districts. Unfortunately the township boards of education in many townships opposed the order, and as they were often supported by the people, township boards of health were at a loss to know

how to proceed. The only means provided for enforcing vaccination was by calling to aid the truant law. But in many school districts pupils by January 8, 1894, had already attended school the full time required by law, so that in such case to enforce the order was to close the school, and still not secure vaccination of the scholars. Several schools were in fact closed rather than submit to vaccination, and the township health authorities were involved in many quarrels with neighbors and school authorities. The Board was flooded with letters in opposition to the order, and with petitions to have it suspended.

From these conditions arose one of the most serious difficulties encountered in attempting to enforce general vaccination of school children; the very existence of our township boards of health was placed in jeopardy. The State Board had special reason to congratulate itself on having secured the establishment of boards of health for rural districts. In considerably less than a year's time over one thousand township boards of health were established and fully organized for health work. Their efforts in preventing spread of infectious diseases were fast gaining public approbation, and the time seemed near at hand when we could point to an effective board of health in each town and township in the State. The wave of opposition against vaccination in the townships, where, it was urged by the people, small-pox was unlikely to occur, threatened, however, to wipe out a thousand boards of health and undo all that had been accomplished in rural sanitation.

On the meeting of Legislature a Representative called at the office and said that never since war times had he known greater excitement than prevailed in his county over the vaccination order. Indignation meetings, he stated, had been held in every township, and he had been burned in effigy for voting for the bill to establish township boards of health and to give the State Board such powers. Another Representative called and said he had prepared a bill to abolish the township boards of health. Although his reason for introducing the bill was not stated to be on account of the vaccination order, it is highly probable that a bill of this character would have been passed had the vaccination order not been suspended.

A further reason for temporarily suspending vaccination arose from the increasing prevalence of la grippe during the month of December. Following the meeting of the Board on the 7th, letters and petitions from many sections of the State were received, requesting permission to postpone vaccination for a time on account of local enemics of this disease. Not deeming it advisable to vaccinate, and especially to enforce vaccination during the prevalence of an epidemic disease, requests of that character were granted.

On turning to our monthly reports for indications of increasing prevalence of this disease, we find a marked extension in December as compared with the previous month, especially if the increased mortality from pneumonia, which is, with great probability, largely attributable to la grippe, be taken into consideration. During November, 1893, in a population of 1,387,258, there were reported fifteen deaths from la grippe and 228 deaths from pneumonia. During December, 1893, in a population of 1,352,827, there were reported 144 deaths from la grippe and 412 deaths from pneumonia, being an increase of 129 deaths from la grippe and 184 from pneumonia, as compared with the previous month. Compared with December, 1892, when influenza was not prevailing, there were reported in a population of 1,327,745, no deaths from that disease and but 186 deaths from pneumonia, showing an excess of 212 deaths from the latter disease.

The population represented in the reports for December is, roughly, one-third of the entire population of the State, and chiefly an urban population. Reports from rural districts indicate that la grippe has been equally prevalent there. If it be assumed that the mortality was proportionately equal throughout the State, there were in December, 1893, no fewer than 434 deaths from la grippe and 1,236 deaths from pneumonia, in part chargeable to the former disease.

The fact, generally observed, that the rate of mortality from la grippe has been unusually small this year, should be taken into consideration in judging of the prevalence of the disease from the number of deaths reported.

It may be of interest for future reference to briefly note the principal reasons urged in opposition to compulsory vaccination of school children. We may dismiss the opposition of anti-vaccinationists, which will always be encountered, except to note the fact that a limited number of physicians may be found in our State who oppose it, and acquire a following of all those who resist vaccination, from whatever cause.

There is unfortunately some room for conflict of authority on account of the statutes authorizing both boards of health and boards of education to enforce vaccination. There is, in fact, no express authority granted to boards of health to enforce vaccination; they must act under the general provision authorizing them to make and enforce regulations for the prevention of disease. On the contrary, boards of education are directly authorized to provide for and require vaccination of school children. Boards of education were greatly averse to having schools interrupted, and in very many places, and especially in the townships, were opposed to vaccination at any time. It was urged that as Legislature had left the matter of vaccination of school children to the option of the boards of

education, boards of health had no authority to interfere except in the presence of small-pox. This was a most prolific source of trouble and opposition to the Board's vaccination order.

The objection most frequently raised against vaccination by individuals, as well as by many health authorities, was that the cold season of the year is an unfavorable time for the operation on account of serious complications being more apt to arise. While there is probably not much ground for this belief, the opposition it aroused against the vaccination order seriously interfered with its enforcement. Scores of letters were received from boards of health and individuals, promising that the vaccination order would be complied with in the spring, but expressing a determination to resist vaccination during the cold weather. From some cause it appears that the vaccine disease has been more severe this year than usual. Many reports of deaths from vaccination were published in the papers. These were all inquired into by me; and while they proved to be false, they caused a general excitement which official contradiction could not allay. A remarkably large number of cases of vaccine eruption were reported; and in one such case the attending physician maintained that the disease was small-pox, due to vaccination, and the case was treated as such, and quarantined by the township health authorities. Reports of these cases, published in the papers, created much alarm and increased the opposition to vaccination.

The financial depression was another obstacle to vaccination that should be noted. To those of us familiar with the cost of small-pox epidemics, this objection is more than groundless; for it is probable that the one epidemic in Akron of a year ago caused a financial loss sufficient to have met the expense of vaccinating all the school children in the State; and vaccination may justly be looked upon as insurance against such losses. This year, however, and especially during the last two months, thousands of laboring men have been out of employment. The majority of such men shrink from relief from the pauper fund as long as possible; and as public authorities are only justified in providing vaccination for the poor, hundreds of unemployed opposed the order because they were unable to bear the expense and too proud to have it paid out of the poor fund.

The suspension order caused some misunderstanding on the part of local authorities. The order was intended to give relief to the township boards of health, and at the same time allow local health authorities of cities and villages, or of townships where the order has been locally adopted and published to to still enforce it, if conditions justified. In some places this was done, but in some others it was claimed that vaccination was defeated by the suspension of the order. The foregoing will have made it clear that, hav-

ing the sanitary interests of the whole State in view, no other action could have been taken by this Board.

An attempt was made to secure from each board of health a report of the school enrollment, the number vaccinated prior to 1893, and the number vaccinated during 1893. A large number failed to report, but the following table will show that in spite of opposition many thousands of school children were vaccinated under the Board's order:

166 Cities and Villages.

Enrollment	84,598	
Vaccinated prior to 1893	20,138	24%
Vaccinated in 1893	33,567	40%
Unvaccinated	30,893	36%

149 Townships.

Enrolled	41,771	
Vaccinated prior to 1893	4,086	9+%
Vaccinated in 1893	11,720	28−%
Unvaccinated	25,965	62%

INSPECTION OF NATIONAL VACCINE ESTABLISHMENT.

Washington, D. C.

Mr. President: Your committee, on the establishment of a vaccine farm, on May 13, inspected the National Vaccine Establishment at Washington, D. C. Dr. Stanton, a member of the committee, was, at the last moment, prevented from going. Dr. Kinyoun, bacteriologist of the Marine Hospital Service, stationed at present at Washington, accompanied us.

We are under many obligations to Dr. Walsh, manager of the establishment, for the pains taken to give us the best possible opportunity for witnessing methods used there in propagating vaccine virus.

The farm consists of ten acres located some seven or eight miles from Washington, on a line of electric railway. There is on it a commodious dwelling in which Dr. Walsh and family live for a part of the year, and the stables in which vaccinated animals are kept. These are neat and plain wooden buildings, kept whitewashed.

The vaccine seed now used was obtained from the New York City vaccine farm. Animals for vaccination were formerly rented, but are now purchased by Dr. Walsh. After use they are sold for food or any other purpose. Calves from one to three years old are used.

Vaccination is performed on the back, the scarification commencing a few inches in front of the root of the tail. Patches of skin, about eight inches long and four inches wide, on both sides of the spinal column, are shaved clean and washed with clean water, soap, and balls of absorbent cotton. A knife with five parallel blades is used for making the incisions. These are quite deep as compared with the incisions made in human vaccination, and considerable blood is drawn. Vaccination is performed with what are known as "seed spades." These are large ivory points charged with the lymph first taken from the calf.

As a rule a calf is vaccinated at the time lymph is being taken from another calf. In from four, five to seven days after vaccinating, depending partly on the atmospheric temperature, the lymph is collected. At this time the site of vaccination is covered with a thin scab. This is scraped off with a piece of ivory having a blunt edge, until a clean oozing surface is reached. Clean water and balls of absorbent cotton are used in the cleaning. A row of ivory points, twenty or more in number, are fastened between two pieces of wood, leaving the points presenting.

The oozing lymph is taken up with a camels-hair brush, and brushed over the points. These are placed in a tin box with a cover, where they are allowed to dry. These points are in reality ivory, and not bone as often supposed, and the pointed or charged end is never handled.

The stables and surroundings were found scrupulously clean. The animals on hand for vaccination were in good condition and apparently healthy.

Dr. Kinyoun made three suggestions which Dr. Walsh expressed the intention of adopting, viz.:

1st. Testing all animals for tuberculosis by tuberculin.

2d. Sterilizing points by heat before charging them, and

3d. Covering vaccinated surface with Collodion for protection against inoculation by flies. Although the stables were as effectually screened as could be, it was impossible to keep out all flies.

With respect to establishing a vaccine farm in connection with the Ohio State University, your committee is of the opinion that it would not be wise to urge that this be done in the near future. Neither is your committee in favor of keeping on hand a large supply of virus to be sold to local authorities and physicians. It is believed so doing would arouse the active opposition of the drug trade, and cause an endless amount of work and annoyance in supplying small orders, collecting bills, etc.

We therefore recommend that the plan adopted by the Board for the past six years be continued, viz.: To keep on hand a small amount of reliable vaccine virus to be furnished free, on an outbreak of small-pox, for the vaccination only of persons who have been actually exposed to the disease.

Respectfully submitted.

(Signed) THOS. C. HOOVER,
" C. O. PROBST.

INSPECTION OF THE NATIONAL WOMAN'S RELIEF CORPS HOME, AT MADISON, LAKE COUNTY.

BY THE SECRETARY.

A letter was received from the secretary of the National Woman's Relief Corps Home, stating that there was fear that the water supply of the Home was subject to pollution; that the Board of Managers, by the advice of the Representative from Lake county, had instructed the secretary to request me to come and make an investigation in order that changes in water supply or sewerage, if required, might be properly made. Accordingly, I visited the Home on June 19, and was met by the secretary, Mrs. Pluma L. Cowles, of Geneva. On returning I made the following report of my investigation:

OHIO STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
COLUMBUS, OHIO, *June* 22, 1894.

MRS. PLUMA L COWLES, *Secretary N. W. R. C. Home:*

DEAR MADAM: On June 19, at your request, I made an inspection of the National Woman's Relief Corps Home, at Madison, Ohio, and beg leave to submit the following report:

Permit me to say first that I was much pleased with the institution and the manner in which it is conducted. No effort seems to have been spared, in the arrangement and furnishing of the building, to secure the comfort of the inmates, and the visitor is impressed with the fact that he is in a well ordered *home.*

The sanitary features of the Home are excellent, with the possible exception of the water supply. This is taken from a dug well thirty-five feet deep, located a short distance north of the building, the water being pumped to the tanks in the attic by windmill. The drainage from the building, which includes water from the water closet, laundry and kitchen, and a considerable part of the roof water, is conducted through a pipe drain to a cess-pool located about 200 feet north of the building, and 120 feet northeast of the well It is nine or ten feet deep; walled with rock uncemented, so as to leach freely into the soil. The soil is sand and gravel with a slight layer of clay beneath, which is pierced by the well.

It is possible, as a large amount of water is pumped from the well, that its circle of drainage may at times extend nearly, if not quite to the cess-pool, and I would therefore strongly urge that this cess-pool be cleaned, filled and abandoned. Without great expense the house drain may be extended directly north for a distance of 125 feet, and a new cess-pool be constructed on the plan of the old one, at its terminus. At that distance from the well, practically 250 feet—there will be no danger of pollution of the water supply from that source. Great care should be taken to secure an absolutely water-tight drain; and I would caution you, that unless the drain pipes are properly bedded there is danger of joints being broken by the settling earth.

I should perhaps call attention to the fact that the east and west partition walls seem to be imperfectly supported. While I do not consider the walls to be in a dangerous condition, I would advise that you call upon the Inspector of Workshops and Factories to examine them and suggest means for increasing their foundation support.

Very respectfully,

(Signed) C. O. PROBST, *Secretary.*

REPORT ON THE SANITARY CONDITION OF EAST PALESTINE.

BY THE SECRETARY.

The board of health of East Palestine reported that the village was in bad a sanitary condition, owing to the neglect of council to provide adequate drainage facilities, and requested me to come there with a view of enabling the board to secure needed improvements.

As East Palestine is near Alliance I was able to visit both places without much increased expense or loss of time. I was piloted over the village by the health officer, accompanied by members of the board of health. On my return I made the following report to the board of health, and by them it was transmitted to council:

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, O.

To the Board of Health, East Palestine, Ohio:

DEAR SIR: On the 11th of July, at the request of your board, I made an inspection of the sanitary condition of your village, and would respectfully report as follows:

I desire first to congratulate your village on having provided a public supply of pure water. Its use should be encouraged, as the water in your wells, owing to the fact that leaching privy vaults are everywhere allowed, is much less likely to be pure and wholesome. As your public water supply is derived from ground water great care should be taken to protect it from pollution arising from contamination of the soil in the neighborhood of the public well. In this connection attention should be called to the pollution of Leslie's run. This stream flows within a short distance of the well from which the public supply is pumped, and there is a possibility that contamination of the stream will contaminate the water supply. The banks of the run are being used as a public dumping ground, and a slaughter house is situated on the run a short distance above the pumping station. All pollution of this stream should be stopped; that which occurs within the corporation, by the board of health; pollution outside should be stopped by the corporation, as provided in Section 2433 of the Revised Statutes.

While a public supply of pure water is a blessing to any community, it may be indirectly the cause of a nuisance, and detrimental to health. The introduction of a public water supply always leads to a greatly increased amount of foul water to be disposed of, and sewerage becomes necessary. Where drains have already been provided to carry off storm water it invariably happens that these are used by an ever increasing number of persons to carry off household wastes. As rainfalls are depended upon to flush them, the contents of these drains decompose between storms, and noxious odors pervade the streets and houses. As soon as possible, therefore, your village should be provided with an adequate system of sewerage. Fortunately the topography is such as to allow a ready escape of storm water, so that in introducing sewerage the "separate system," i. e., small pipe sewers used exclusively for household drainage, will suffice. This is very much cheaper than the "combined system," where both storm water and sewage have to be cared for.

At the present time the failure to provide means for surface drainage is causing most trouble. Lake run, which flows through the village, receives most of the surface filth, which is washed into it by rains, and in addition the drainage from a considerable number of houses. This run is obstructed by rocks and bolders and various kinds of refuse thrown into it. Stagnant pools are formed, which give off bad odors, creating a nuisance at many points. Without great expense a smooth open drain could be constructed in this run which would rapidly carry off its ordinary flow. Household drainage brought to the run should be carried to this open drain so that it would be quickly removed. By this improvement, and by keeping other kinds of filth out of it, this source of nuisance could be removed.

House drainage being carried into the street gutters, without proper provision for its free escape, is another source of nuisance. These gutters are in many places obstructed by a growth of grass and weeds, and by stones and street washings, so that foul slops are retained, to decompose and load the atmosphere with bad odors. This should be remedied by having smooth gutters, made of brick, or better, of half sections of sewer pipe. Until a sewerage system is introduced it will be much better to carry off household wastes by these smooth gutters, than to run it into underground drains which cannot be flushed except by storms.

One specially bad place exists near the depot, where a storm sewer, which carries a considerable amount of house drainage, empties into an open ditch. The bad odors at this point are plainly perceptible to passengers on stopping trains, and would certainly not invite one to take up a residence in your village.

You are aware that all matters of sewerage and drainage are placed by law in the hands of council, so that your board will have performed its whole duty by calling the attention of council to the unsanitary conditions arising from their neglect.

It is to be hoped that your citizens, recognizing the necessity for improved drainage, will urge council to provide, at no distant day, a complete system of sewerage.

Respectfully,

(Signed) C. O. PROBST, *Secretary.*

REPORT ON THE SANITARY CONDITION OF UHRICHSVILLE.

BY THE SECRETARY.

Dr. McCollam, of Uhrichsville, a member of the local board of health, reported that sanitary matters were at a low ebb in the village, and that the members of the board proposed to resign unless something could be done. He stated that the principal difficulty was that the mayor, from timidity or policy, would not sustain the board in enforcing its orders. I was urged to pay them a visit, which I did May 31st. I was met by Dr. McCollam and Mr. Stout, members of the board, and Dr. Groves, health officer, and we spent the afternoon viewing the village and its water works.

Uhrichsville is a town of about 4,000 inhabitants, located on the Pennsylvania and the C., L. & W. railroads. It is continuous with Dennison, a town of about 3,500 inhabitants. The towns are in a rather narrow valley surrounded by high hills. Light and water are furnished to both by the same plants. Water is obtained from big Stillwater creek, the pumping station being located more than a mile from either town. This stream does not receive drainage from any town above the intake, and would seem to afford a fairly good water supply, except that the water is very muddy in time of floods. Water is pumped to a reservoir on the top of a high hill and is delivered by gravity.

Only about one-tenth, estimated, of the population of Uhrichsville use the public supply, the balance depending on wells; and as no precautions are taken to guard against privy vault pollution, many of them furnish bad water.

No reports are made of cases of typhoid fever, but Drs. Groves and McCollam were able to count some seventy cases as having occurred during the past year, with six deaths.

A meeting of the board of health was held in the evening. I found that the board had properly adopted and published rules and regulations which, if enforced, would guarantee a good sanitary condition of the town. As I informed the members, they had a most excellent health organization—on paper. The board is composed of good men, and they have

accomplished considerable good, but in a number of instances they had allowed their orders to be set at defiance. Some of their physicians refused to report contagious diseases. The mayor in one or two instances had refused to issue a warrant for the arrest of persons violating their orders.

The matter of the board's powers and duties was fully entered into. The steps to be taken to abate nuisances were fully explained. The mayor's position in refusing to issue a warrant, and the means to be taken to compel him to perform this duty, were also discussed. I should say that the mayor showed no hostility, but on the contrary, seemed desirous to carry out all necessary sanitary measures.

I learned that in many years' work of the board no person had ever been prosecuted for failure to comply with its orders; and I advised that such an example be made at the first opportunity, selecting a case where some man of influence was at fault. It was stated that several of their well-to-do citizens had made light of the board's orders and defied the board to enforce them.

My visit, as one of the members expressed it, stiffened the back bone of the board, and the members expressed the determination to strictly enforce their rules and regulations.

The following is a copy of a report on the chemical examination of the water supply for Uhrichsville, furnished by the health officer:

Sample taken from hydrant at Healea & Green's office, June 25, 1894.

GENERAL CHARACTER.

Sample moderately clear, after filtration perfectly clear, without color, odor or taste. The reaction exhibited the presence of free carbonic acid.

COMPOSITION.

The following examinations, except those for nitrogen, were made with filtered water, and relates therefore to matters held in solution. These are as follows:

Total solid matter in solution, 82.25 parts in one million parts of water, or about 4.77 grains per gallon.

Silica, 11 parts in one million parts of water, or about 0.638 grains per gallon.

Iron and aluminum oxides, 4 parts in one million parts of water, or about 0.232 grains per gallon.

Calcium, 42 parts in one million parts of water, or about 2.43 grains per gallon.

Magnesium, 11 parts in one million parts of water, or about 0.638 grains per gallon.

Sulphur as SO^4, 23 parts in one million parts of water, or about 1.33 grains per gallon.

Chlorine, 5.65 parts in one million parts of water, or about 0.327 grains per gallon.

Sodium, by difference, 12 parts in one million parts of water, or about 0.696 grains per gallon.

Temporary hardness equivalent to 146 parts of calcium carbonate in one million parts of water, or about 8.468 grains per gallon.

Permanent hardness equivalent to about 6 parts of calcium carbonate in one million parts of water, or about 0.348 grains per gallon.

Nitrogen present as ammonium compounds .000026 part in one million parts of water.

Nitrogen present in organic combination .000176 part in one million parts of water.

Phosphates, traces.

Nitrates, traces.

CO^2, both free and combined, 87 parts in one million parts of water, or about 5 grains per gallon.

Dissolved oxygen, at 60 degrees F. and 760 mm, 8.94 parts in one million parts of water, or about 0.518 grains per gallon.

DISCUSSION.

An examination of the above analytical results shows the following facts:

1. The total amount of dissolved solids is quite low, much less than is generally found in deep well waters; the water, therefore, is available for mechanical and manufacturing purposes, generally, to a much greater extent than is the case with waters obtained from wells.

2. The low amount of solids, and especially the sulphate of lime, indicates that when used as a boiler water, the deposits will be in the form of a soft sludge easily gotten rid of by blowing off.

3. The very low amount of organic matters indicates that the water is quite free from injurious sewage contamination. A feature worthy of especial mention, shown by this and a former analysis, is that of the organic matter present; the major portion is suspended instead of being dissolved, and hence may be removed by simple filtration through a bed of sand or other cheap filtering material. In this respect it is much to be preferred to those waters which, though clear and sparkling in appearance, contain dissolved large amounts of organic matter incapable of being removed by filtration.

As far as a chemical analysis is capable of indicating, the water, especially if subjected to filtration, may be regarded as possessing every quality necessary in a water designed for general public use.

4. The low amount of dissolved solids, and the presence of considerable dissolved oxygen and carbonic acid indicate that the water may possibly attack the iron of boilers in which it is used, but this fact can be certainly determined only by actual trial.

(Signed) J. H. BEAL, *Analyst.*

REPORT ON THE SANITARY CONDITION OF SCHOOL HOUSE AT BRYAN.

BY THE SECRETARY.

On July 4, at the request of the board of health and board of education, Williams county, I examined one of their school buildings to determine its sanitary condition, which had been questioned by some of the citizens.

The mayor, health officer and members of the board of health and board of education accompanied and aided me in the investigation.

The building is of brick, two stories high, has no basement, and was constructed early in the sixties. There are two rooms down stairs and two up, only one of the upper rooms being used.

The window space for lighting is ample and properly placed. Blackboards at the sides of the rooms are placed between windows, and when used by teachers for class or general instruction must be hurtful to pupils' eyes.

Heating is accomplished by stoves made to burn wood.

The rooms are ventilated by windows, a strip of wood being placed under the lower sash of each window. A year or two ago, to improve the ventilation, tin pipes about eight inches in diameter were placed in two corners of each lower room. The pipes reach nearly to the floor, and are open at their lower and upper ends. On one side of the building these pipes extend to the attic, which is closed, however, passing through the school-room above but having no connection with it. On the other side the pipes open into the room above, which is not used. Ventilators are placed in the ceilings of both lower rooms.

Complaints had been made that the building is damp. The janitor admitted that the walls of the lower rooms are at times, though very rarely, covered with moisture. I can account for this only by supposing it to be due to the condensation of the aqueous vapor of the atmosphere. The foundation walls are protected against dampness by the grounds having been graded to carry the rainfall away, and by drains to carry off roof water collected by the eaves.

Complaints had been made to the local authorities that many of the children who attended school in this building suffer from headache, but on inquiry it appeared that complaints were as frequent regarding children who attended school at the new building, in which the Smead system of heating and ventilation is used.

On the whole it may be said that the old school building is in fairly good sanitary condition.

Improvements can be made in its ventilation, and at small cost, and I recommend the following changes:

Enclose the stoves with tight sheet-iron jackets fastened to the floor and extended two or three feet above the stoves. Make an opening in the floor under the stove and connect it with a tight wooden or sheet-iron conduit extending under the floor to the open air. A considerable volume of fresh, partly warmed air can be introduced into the rooms in this manner. During school hours lighted lamps should be placed in the tin pipes in the corners of the rooms. These pipes should be carried to the attic on both sides, and the attic should have an opening for the escape of foul air. The upper room should have independent pipes carried to the attic, with burning lamps in them, the same as for lower rooms. The stove should be jacketed and a fresh air conduit constructed between

the floor of the upper and ceiling of the lower room. This arrangement, with watchfulness of the windows, will secure a fairly good ventilation.

I also inspected the new school building, which was constructed a few years ago. No complaint has been made of this building since stoves, which are kept burning during school hours, were placed in the ventilating stacks.

The only fault to be found with the building is the location of blackboards. All of these are between windows, and a strong glare of light is met by many of the pupils in reading work on boards at sides of rooms. This evil is aggravated by there being no recitation benches from which pupils might look in a favorable direction, and by the use of "dustless crayons," a kind of soapstone which gives grayish, indistinct marks. All of those present during our investigation, complained of painful vision on attempting to read sentences written on certain of the blackboards, and a few were unable to read the sentences at all from across the room.

I was informed that it is a matter of common observation that an unusually large number of school children are troubled with defective vision, and certainly the conditions exist to produce it. No proper inquiry has been made as to the condition of the pupils' eyes, or the number affected, and I would advise that a competent man be employed to examine into this. I would also advise that crayons producing a pure white mark be used on blackboards. Blackboards in an unfavorable condition should not be used for general school work. For this purpose it would be much better to have blackboards placed at the ends of the rooms, facing the scholars.

Respectfully submitted.

(Signed) C. O. PROBST, *Secretary.*

Under date of October 21, Mr. N. Vineyard, the health officer of Bryan, writes: "The board of trustees have repaired the Butler street school building just as you recommended; and there seems to be good satisfaction rendered. Mr. Gillis, member of the board, told me that they carried out your suggestions to a dot."

REPORT OF DELEGATE

TO THE MONTREAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

The twenty-second annual meeting of the American Public Health Association was held in Montreal, Canada, September 25–28, 1894. The meeting was well attended, about 250 members being present.

A few valuable papers were presented. A group of papers, bearing upon water supplies and their purification, were of very great interest. Among the most important of these was the report of the committee on the pollution of water supplies, presented by Dr. Charles Smart of the United States Army.

This committee, in its report presented at the Milwaukee meeting, in 1888, took the position that a water polluted with sewage cannot be safely used as a public water supply, as the means ordinarily used for purifying public supplies cannot be depended upon for the removal of typhoid fever germs, if these are present in the water. This year the committee receded from that position in view of what has since been shown can be done in removing bacteria by filtration through sand.

Filtration as carried out at Lawrence, Mass, and at Poughkeepsie, Hudson, Ilion, and Mt. Vernon, New York, shows that 98 per cent. of the bacteria can be removed, and that the typhoid fever death rate in these cities was reduced, by filtration of water, from 127 to 24 annually per 100,000. The committee pointed out that the work in water bacteria was in somewhat chaotic condition, and suggested an arrangement for co-operative work by which the different forms of water bacteria could be separately studied at different laboratories; one for instance taking up the intestinal bacteria, another the vibrios, and so on.

In line with this suggestion, and at the request of Dr. Smart, I introduced the following resolution, which was adopted:

Resolved, "That this Association approves the suggestion of the co-operative investigation into the bacteriology of water, and commends the efforts of the committee in carrying out this work to officers of State and Municipal boards of health, to the individual members of this Association, and to all persons interested in the purity of water supplies, for such special assistance as they may be able to render."

The executive committee subsequently made the committee a grant of $200, for preliminary work. In this connection a matter of interest may be stated. After the meeting Dr. Smart went to New York city with Dr. Ferguson of that city, for the purpose of soliciting financial aid for the committee from some of the Life Insurance companies. The president of the New York Life Insurance Company had told Dr. Ferguson that his company would be willing to contribute towards scientific sanitary investigation, which would likely result in lowering the death rate of their policy holders. I have not yet learned whether contributions were received, but I consider that this would be a most valuable precedent, showing the financial interests at stake in work of this character.

Another paper, in this water group, of interest, was presented by Mr. Fuller, who is in charge of the bacteriological work at the Lawrence Experi-

ment Station. The city of Lawrence a year ago established filters for the public water supply. The bacteria of the Merrimac river were reduced by filtration from about 9,000 to 150 per c. c., or over ninety-eight per cent. During the five years preceding the use of the filter the average annual death rate from typhoid fever was 127 per 100,000 inhabitants, while during the past year, filtered water being supplied, the rate was but fifty-two per 100,000, a reduction of about sixty per cent. Furthermore, nearly one-half of the deaths were among mill operatives who did not drink the filtered water. This is the more interesting because the city of Lowell, only a few miles above Lawrence on the Merrimac, suffered severely during the year from typhoid fever; and it has been shown in former reports that an increase in typhoid fever in Lowell heretofore has been usually followed by an increase in the disease at Lawrence.

At the close of the discussion of these papers the following resolution, presented by Dr Gardiner, of Ontario, was adopted:

Resolved, "That in view of the danger to the public health by the contamination of our fresh water lakes, rivers and streams, that this association memorialize the different Federal governments as well as the State and Provincial governments, to pass laws prohibiting the contamination of these water supplies by sewage from cities, towns and villages, and compel them to provide some means for the treatment and oxidization of this sewage before emptying it into these places."

Some interesting papers were presented on diphtheria; one of value was that by Dr. Bryce, of Ontario, on "Practical Difficulties of Medical Health Officers and Physicians in Dealing with Suspected Cases of Diphtheria." A point of practical importance brought out in this paper was the necessity for bacteriological examination to establish the diagnosis of diphtheria, and the practical impossibilities of having this done in most cases. The author urged that at present health officers should use preventive measures in all cases of membranous sore throat. It might also be pointed out in this connection that it will now be difficult, or impossible, to enforce the law requiring reports of diphtheria cases unless the diagnosis is made certain by bacteriological examination.

Dr. Nagle, Registrar of Vital Statistics of New York City, presented a report on the Antitoxin treatment of diphtheria.

Several papers on tuberculosis were presented. Dr. Donohue, President of the New York State Board of Health, read a paper on the "Examination of the Milk Supply for Tuberculosis in the State of New York." It appears that a special Tuberculosis Commission was created in the State, May 1, 1894, the commission being clothed with authority to seize and destroy tuberculous animals, compensating the owners for damages.

According to the author, the tuberculin test for tuberculosis in animals has not proved infallible, although a reliable aid in diagnosis.

any system of sewerage now in use, unless the proposed source of such water supply or outlet of such sewerage system shall have been submitted to and received the approval of the State Board of Health," and submit the following questions:

1. "If a city, village or private corporation or person introduces a public water supply or system of sewerage, and refuses or neglects to submit the same to the State Board of Health for approval, as required, how will the bonds issued to build a water works, or sewerage system, under such circumstances, be affected as to their legality?

2. "If the Board examines a public water supply or system of sewerage introduced subsequent to March 14, 1893, without its approval, and finds good cause for not approving the source of the water supply or outlet of sewerage system, what action may be taken by the Board to prevent the use of such water supply or sewerage system?"

In reply I beg to say:

1. I do not think the bonds referred to will be invalidated for want of the approval of the State Board of Health of the proposed water supply or sewerage system.

2. If a water supply is in use, introduced subsequent to March 14, 1893, which the State Board of Health has, for good grounds, refused to approve, the Board might call upon the city authorities to show cause why an order should not be made requiring the city to discontinue the use of the water supply until altered so as to comply with the reasonable views and requirements of the State Board. The local authorities should be afforded the opportunity of being heard. After they have been heard, or have refused to avail themselves of the opportunity of being heard, the State Board might make such order as the circumstances of the case require, and enforce the order by a prosecution under Section 2137 (as extended and made applicable to the orders of the State Board of Health, by Section 5 of the act of March 14, 1893), or by a suit in court enjoining the further use of the water supply until changed to conform with the order of the Board.

Very respectfully,

(Signed) J. K. RICHARDS, *Attorney General.*

COUNCIL MAY BE COMPELLED TO PAY THE EXPENSES OF BOARDS OF HEALTH.

COLUMBUS, OHIO, *June* 25, 1894.

DR. C. O. PROBST, *Secretary State Board of Health:*

DEAR SIR: In your favor of the 16th instant, you submit to me the following question:

"Where a board of health had been properly and legally organized, and has appointed a health officer and fixed his salary ($80.00 per annum), and the council, upon application and certificate from the board of health, refuses to pay the salary of the health officer, what steps shall be taken by the board of health to compel the council to pay this expense of the said board?"

Section 2115, Revised Statutes, requires the board of health to appoint a health officer, and empowers it to fix his salary. Section 2140 of the same chapter provides:

"When expenses are incurred by the board of health, under the provisions of this chapter, it shall be the duty of the council, upon application and certificate from the board of health, to pass the necessary appropriation ordinances to pay the expenses so incurred and certified."

If the council or other city officers refuse without just cause to do the duty enjoined by this section, a proceeding in mandamus might be instituted to compel the performance of such duty.

Very respectfully,

(Signed) J. K. Richards, *Attorney General.*

MUNICIPALITIES RESPONSIBLE FOR NUISANCES.

COLUMBUS, OHIO, *October* 3, 1894.

DR. C. O. PROBST, *Secretary Ohio State Board of Health*:

MY DEAR SIR: In reply to your inquiry of the 19th ult., I beg to say, that an examination of the law upon the subject leads me to believe that a municipal corporation, which constructs a sewer with an outlet emptying into an open ditch within the corporation, thus creating a public nuisance, may be indicted for creating and maintaining a public nuisance.

I refer you to:

1. Wood in Nuisance, page 1,004;

2. Dillon Municipal Corporations, Section 932, and the cases there cited; also, more especially to case of *State of Maine vs. The City of Portland*, 74 Maine, 268, in which case an indictment against the city of Portland for constructing a public sewer in such a way that the outflow therefrom created a public nuisance, prejudicial to the public health, was sustained. In the report of this case the indictment is set out in full and reference given in the opinion to many cases bearing upon this subject.

Very respectfully,

(Signed) J. K. Richards, *Attorney General.*

LIST OF

al Boards and Health Officers.

JANUARY 1, 1895.

CITIES.

..... L. S. Ebright, M. D.
..... P. W. Welker, M. D.
..... D. W. Long, M. D.
..... W. A. Daugherty, V. S.
..... J. F. Marchand, M. D.
..... A. P. Cole, M. D.
..... J. W. Prendergast, M. D.
..... W. F. Tolbert.
..... Geo. F. Leick, M. D.
..... D. N. Kinsman, M. D.
..... A. H. Iddings, M. D.
..... P. H. Aldrich, M. D.
..... W. B. Hedges, M. D.
..... J. T. King.
..... O. E. Phillips, M. D.
..... Amos Beardsley.

Troy	T. M. Wright, M. D.
Urbana	H. C. Houston, M. D.
Warren	M. L. Williams, M. D.
Washington C. H	J. M. Edwards.
Wellston	R. A. Hutchinson.
Wellsville	Jos. T. Warren.
Wooster	J. W. Lehr, M. D.
Xenia	A. D. DeHaven, M. D.
Youngstown	H. E. Welch, M. D.
Zanesville	H. T. Sutton, M. D.

VILLAGES.

Aberdeen	T. Heaton, M. D.
Ada	W. H. Morrow.
Adamsville	S. J. Lane.
Adelphi	Geo. B. Rose.
Addystown	J. M. Diller, M. D.
Albany (Lee P. O.)	A. F. Holmes, M. D.
Alexandria	D. H. Miller, M. D.
‡Allentown	.....
Alvordtown	F. E. Schrider, M. D.
Amanda (Clearport P. O.)	J. D. Hufford, M. D.
Amelia	W. B. Doan, M. D.
Andover	T. R. Wood.
Anna	C. W. B. Harbour, M. D.
Ansonia	H. A. Snorf, M. D.
Antwerp	Chas. Roberts.
‡Apple Creek	.....
Arcadia	J. E. Bowman.
Arcanum	A. S. Ruby.
Archbold	August Ruihley.
Arlington	N. B. Anderson.
Arlington Heights	J. H. Francis.
Ashland	B. Myers, M. D.
Ashtabula	A. W. Hopkins, M. D.
Ashley	H. N. Coomer, M. D.
Ashville	J. W. Johnson.
‡Athalia	.....
Athens	W. N. Alderman, M. D.
Attica	A. W. Knight, M. D.
†Auburndale (Part of Toledo)	.....
Avondale, Hamilton Co	Jos A. Brown.
Bainbridge	R. H. McKee, M. D.
‡Bairdstown	.....
Baltimore	B. K. Thomen, M. D.
†Barryville	.....
Barberton	T. Eliott Tait, M. D.
Barnhill	R. A. Douglas, M. D.
Barnesville	D. D. Laws, M. D.
‡Batavia	.....
Batesville	F. M. Wardlow, M. D.

† Not incorporated.
‡ Not organized.

Beach City	E. W. Spidell,
Bealsville	Jno. W. Reed, M. D.
Beaver Dam	C. H. Thomas, M. D.
Bedford	C. W. Kerslake.
Bellbrook	J. L. Sebring.
Belle Center	J. F. Dennis.
Bellefontaine	R. G. Reed, M. D.
Belleville	J. B. Lewis, M. D.
‡Belpre	.....
Bellevue	John Earls.
Belmore	G. B. Adrain, M. D.
Belmont	W. C. Hedges.
†Benton Ridge	.....
Berea	T. G. Card.
‡Berne	.....
‡Berlin Heights	.....
Bethel	W. W. Smith, M. D.
‡Bettsville	.....
Beverly	F. A. Pomeroy.
Blake's Mills	Chas. Shoop.
Blanchester	S. B. Judkins, M. D.
Bloomingburg	J. J. Pinkerton.
Bloomdale	E. Wineland.
*Bloomfield (Bloomingdale P. O.)	.....
Bloomville	F. S. Martin, M. D.
Bluffton	F. J. Baldwin, M. D.
†Boliver	.....
Bond Hill	G. Perin.
Botkins	Allen Wical.
‡Boston	.....
Bourneville	D. S. Smith, M. D.
Bowerston	E. E. McPeck, M. D.
Bowling Green	A. Ordway.
Bradford	H. M. Forman, M. D.
Bradner	J. E. Furste, M. D.
Bridgeport	J. Andrew Heinlein, M. D.
Brilliant	——— McDougall, M. D.
Brookfield	W. E. Dunford.
Brookville	A. C. Berst.
Broughton	J. K. Sierer.
Bryan	Nicholas Vineyard.
Buckeye City	T. R. Neldon.
Burbank	M. H. Dodd, M. D.
Butler	J. M. McLaughlin, M. D.
*Butlerville	D. A. Chapman.
Burton	B. A. Ray, M. D.
Byesville	Thos. Barnett.
Cadiz	M. J. Lyons, M. D.
Caldwell	O. O. McKee.
Caledonia	H. Ramer.
*Calais	.....

* Hamlet.
† Not incorporated.
‡ Not organized.

Cambridge	G. D. Miller, V. S.
Camden	D. W. McQueen.
Canal Dover	E. Amick.
Canal Fulton	S. M. Buckmaster.
Canal Winchester	L. W. Beery, M. D.
Canfield	A. D. Woods.
‡Cannelville	
Cardington	S. C. Bennett.
Carey	J. D. Southward.
Carroll	H. A. Brown, M. D.
Carrollton	C. R. Ziegler, M. D.
Carthage	Harry Ross.
‡Casstown	
Catawba	T. D. Beach, M. D.
Cecil	H. L. Weaver.
Cedarville	T. V. Illiffe.
Celina	L. P. Lisle, M. D.
Centerburg	W. B. Merriman, M. D.
‡Centerville	
Chagrin Falls	J. H. Isaacs, Clerk.
‡Chambersburg (Eureka P. O.)	
Chardon	F. S. Pomeroy.
Chester Hill	J. A. Penrose, M. D.
Chesterville	Jno. Gleason.
Chicago Junction	D. H. Young, M. D.
‡Chickasaw	
Clarington	L. N. Timmons.
Clarksville	Z. T. Garland, M. D.
‡Clarksburg	
Cleves	W. C. Hughes, M. D.
Clifton, Hamilton county	Wm. H. Bell, M. D.
Clifton, Greene county	D. E. Spahr, M. D.
†Clinton	
Coalton	W. D. Hippell.
Clyde	Alex. Harnden.
‡Coldwater	
College Hill	E. F. Smith.
Collinwood	A. L. Waltz, M. D.
Columbiana	Geo. Roninger.
Columbus Grove	Jno. K. Lafferty.
*Commercial Point	W. A. Smith.
‡Congress	
Conneaut	E. D. Merriam, M. D.
Continental (Marice City)	S. H. Bretz.
Convoy	R. L. Crooks, M. D.
Coolville	A. M. Frame, M. D.
*Copley	O. E. Arnold.
Corning	G. W. DeLong, M. D.
‡Cortland	
Coshocton	H. Blackman.
Covington	S. C. Sisson.
Crestline	A. J. Cover.

* Hamlet.
† Not incorporated.
‡ Not organized.

....
..... Jas. P. Church.
..... Albert O'Harra.
....
..... G. E. McEndree.
..... M. Worline, M. D.
..... I. N. Reid.
..... S. A. Smith, M. D.
..... A. C. Stuck.
..... C. R. Bradfield, M. D.
....
..... Frank James, M. D.
..... W. H. Hinkle, M. D.
..... W. E. Ramsey.
..... M. L. Andrews.
..... Isaac Yant, M. D.
..... J. M. Marsh, M. D.
..... S. L. McCurdy, M. D.
..... J. H. Lathrop, M. D.
..... E. B. Mosely.
..... Adam Cornwell.
..... A. E. Stepfield, M. D.
..... Frank Comer.
..... R. M. Merriman, M. D.
..... C. C. McLaughlin, M. D.
..... Isaac Staley.
..... G. H. Albright, M. D.
..... W. H. Olloman.
..... Geo. R. Wycoff, M. D.

Flushing	J. V. Webster, M. D.
Forest	W. N. Mundy, M. D.
Fort Jennings	J. F. George, M. D.
Fort Recovery	John Watkins.
Fowler	C. D. Williamson, M. D.
Frankfort	J. O. Hoffhine, M. D.
Franklin	N. A. Hamilton, M. D.
Frazeysburg	Joseph Martin.
Fredericksburg	L. C. Miller.
Fredericktown	W. F. Gibson.
Freeport	W. A. Zellars, M. D.
Fultonham	A. R. Keyes.
Gahanna	J. Clinch, M. D.
Gambier	E. J. Hyatt, M. D.
Garrettsville	C. A. Snow, M. D.
Geneva	F. E. Tibbitts.
Genoa	J. L. Trutton, M. D.
Georgetown	R. B. Fee, M. D.
Germantown	G. W. Heisterman.
‡Gettysburg	.....
Gibsonburg	A. E. Ferguson.
Gilboa	M. A. Darbyshire, M. D.
Girard	A. J. Brooks, M. D.
Glandorf	Jacob Meyerhofer.
Glendale	E. A. Sayre.
Glenville	Chas. B. Cook.
Glouster	J. M. Rhodes, M. D.
‡Gnadenhutten	.....
Good Hope	D. C. Somers.
Grafton	John Isley.
Grand Rapids	William Mailey.
Gratis P. O.	H. Bowman.
Granville	John Watkins, M. D.
*Graysville	C. H. Whittenrock, M. D.
Green Camp	F. W. Moses, M. D.
Greenfield	Scott Powell.
Green Springs	C. W. Skeggs, M. D.
Greenwich	Robert Reynolds, M. D.
*Grove City	Chas. McGiven, M. D.
Grover Hill	C. A. Bray, M. D., Sec'y.
Groveport	C. R. Clement, M. D.
Hamden	J. T. Barrett.
‡Hammondsville	.....
‡Hamersville	.....
Hamler	L. J. Eger, M. D.
Hanging Rock	Joseph Kinkaid.
Hanoverton	H. L. Milbourn.
Harrison	Thomas Bowles, Sec'y.
Harmer	John W. Knox.
*Harrisburg	C. H. Copeland, Clerk.
Harrisville	O. H. Colvill, M. D.
Harrod	D. P. Selleck.
Hartford (Croton P. O.)	.....
Hartwell	Lincoln Phillips, M. D.

* Hamlet.
‡ Not organized.

‡Haskins	
Harveysburg	J. E. Witham, M. D.
‡Havensport	
Hayesville	Dell Andress.
Hebron	R. M. Bonar, M. D.
Herring	J. B. McWilliams, M. D.
Hicksville	S. Blodget.
Higginsport	J. H. Williamson, M. D.
Hilliards	N. P. Davidson, M. D.
Hillsborough	H. M. Brown.
Holgate	J. G. Archer, M. D.
Hollansburg	A. W. Meek, M. D.
Home City	L. B. Terrill, M. D.
Holmesville	R. P. Loller, M. D.
Hopedale	L. A. Crawford, M. D.
Hoytville	E. F. Bell, M. D.
Hubbard	W. S. Bond, M. D.
Hudson	L. D. Osborne, M. D.
Huntsville	J. S. Montgomery, M. D.
Huron	J. H. Calvin, M. D.
Irondale	Aaron Bullock.
Independence	Jas. C. Neville.
Jackson	W. H. Williams.
*Jacksonboro	
Jacksonville	W. W. Wolfe, M. D.
Jamestown	F. W. Ogan, M. D.
Jefferson	A. L. Arner, M. D.
Jeffersonville	D. H. Rowe, M. D.
Jenera	J. A. Hull.
Jerusalem	J. B. Shouse.
Jerry City	W. H. Frederick.
‡Jersey	
Jewett	J. R Roberts.
Johnstown	J. D. Thompson, M. D.
Johnsonville	E. C. Hitchcock.
Junction City	J. A. Moody, M. D.
Kalida	Jefferson Ladd.
Kelley's Island	Henry Efflers.
Kent	L. G. Reed.
‡Killbuck	
Kimbolton	S. M. Mehaffey, M. D.
Kingston	C. B. James, M. D.
Kirby	E. E. Burns, M. D.
‡Lafayette (Herring P. O.)	
LaGrange	G. N. Snyder, M. D.
Larue	G. A. L. Markwith.
Latty	J. H. Horford, M. D.
Laurelville	Berman Friend.
Laura	
Lebanon	F. H. Frost, M. D.
Leesburg	H. A. Beeson, M. D.
‡Leesville	
Leetonia	H. B. Kurtz.

* Hamlet.
‡ Not organized

Leipsic	John McClung, M. D.
‡Lewisburg	
Lewisville	M. Y. Thornberry.
Lexington	J. P. Stober, M. D.
Liberty Center	D. K. Bowker.
*Limaville	
‡Lindsey	
Linwood	W. S. Reynolds.
Lithopolis	J. E. Holmes.
*Little Sandusky	
‡Lockington	
Lockland	R. B. Latta.
‡Lockville	
Lodi	A. O. Mead.
Logan	I. C. Wright, M. D.
London	C. E. Gain, M. D.
Lorain	S. S. Cox, M. D.
Loramies	Thomas Walkup, M. D.
‡Loudonville	
Louisville	J. H. Rodgers, M. D.
Loveland	William Scott, M. D.
Lowell	G. A. Phillips, M. D.
Lowellville	W. S. Baker.
‡Lucas	
Lynchburg	Martin V. Nolder.
Macksburg	R. C. Smithson.
Madison	C. H. Quale, M. D.
Madisonville	E. A. Flinn, M. D.
Magnetic Springs	C. L. Swartz, M. D.
Maineville	E. S. Garwood.
Malta	Z. Wiseman.
Malvern	E. C. Ross, M. D.
Manchester	R. A. Stephenson, M. D.
‡Mapleton	
Marblehead	A. B. Jordan, M. D.
‡Marlborough	
Marseilles	C. H. Bower.
Marshallville	H. B. Wilford.
*Martinsburg	
Martinsville	W. K. Ruble, M. D.
Marysville	A. B. Swisher, M. D.
Mason	C. T. Hall, M. D.
Maumee City	G. W. Rhonehouse, M. D.
Marengo	J. W. Pratt, M. D.
McArthur	G. M. Swepston, M. D.
McClure	J. W. Sharp, M. D.
McComb	J. A. Thompson, M. D.
McConnelsville	J. D. Maris.
Mechanicsburg	O. A. Nincehelser, M. D.
Mechanicstown	J. M. Watt, M. D.
Medina	A. A. Foskett.
Melrose	R. E. Kingery.
Mendon	J. M. Miller, M. D.

* Hamlet.
‡ Not organized.

.....	J. W. Lowe, M. D.
.....	E. C. Van Gundy, M. D.
.....	.....
.....	A. Wilson, M. D.
.....	.....
.....	.....
.....	W. S. Bookwalter, M. D.
.....	Richard Rawl.
.....	F. C. Curry, M. D.
.....	J. H. Weiser, M. D.
.....	J. H. Pugh, M. D.
.....	.....
.....	J. F. Noble, M. D.
.....	.....
.....	.....
.....	M. McCowan.
.....	J. E. Whitmar, M. D.
.....	.....
.....	J. C. James.
.....	William Ohl.
.....	Thomas J. Rouch.
.....	.....
.....	F. S. Buchanan.
.....	R. A. Rulman, M. D.
.....	.....
.....	E. R. Kreider, M. D.
.....	H. W. Wertz, M. D.
.....	R. S. Hazlett.

‡New Bloomington (Agosta P. O.)	
†New Berlin	
New Bremen	M. S Eckermeyer, M. D.
New Carlisle	Ben Davis, M. D.
Newcomerstown	J. R. McElroy, M. D.
New Concord	L. J. Graham, Secretary.
†New Franklin	
New Holland	J. A. Dunlap.
New Knoxville	H. E. Fledderjohann, M. D.
New Lebanon	Samuel Bowman.
New Lexington	Jos B. Porter.
New Lisbon	R. G. Eells.
New London	W. B. Newkirk.
New Madison	J. S. F. Hageman.
New Matamoras	W. L. West, M. D.
New Paris	I. S. Robinson, M. D.
‡New Petersburg	
New Philadelphia	J. T. Maclean, M. D.
New Richmond	J. C. Evans, M. D.
New Riegel	John Moes, Jr.
New Stark	J. F. Rudy, M. D.
New Straitsville	Marion Truex.
*New Salem	
Newton Falls	C. M. Rice, M D.
New Vienna	R. T. Trimble, M. D.
New Washington	J. F. Kimlerline.
Ney	P. M. Lehman, M. D.
Niles	F. Casper, M. D.
North Amherst	N. H. Cornwell, M. D.
North Baltimore	J. E. Somers, M. D.
‡North Bend	
North Lewisburg	A. Spain.
†North Lawrence	
North Robinson	C. C. Mandeville, M. D.
Norwich	L. D. Wilson, Secretary.
Norwood	C. W. Tidball, M. D.
Oak Harbor	F. S. Heller, M. D.
Oak Hill	W. W. Morgan.
Oakwood	J. H. Stover.
†Oakland	
‡Oakley	
Oberlin	E. L. Burge.
Ohio City	E. E. Smith.
Olmstead Falls	C. H. Barnum.
‡Orangeville	
Orrville	H. Blankenhorn, M. D.
Osborne	R. O. Hoover, M. D.
Osgood	J. W. Sprague.
Osnaburg	Joshua Whiteleather, M.D.
Ostrander	G. E. Cowles, M. D.
Ottawa	W. H. Wert.

* Hamlet.
† Not incorporated.
‡ Not organized.

Ottoville	A. Binder, M. D.
Otway	Alfred Jones.
Oxford	E. L. Hill, M. D.
‡ Palestine	
* Patriot	
Patterson	J. C. Gardner.
Painesville	D. J. Merriman, M. D.
‡ Paris	
Pataskala	Albert Stratton.
Paulding	P. A. Dix, M. D
Payne	J. D. McHenry, M. D.
Peebles	Jas. W. Yankie.
Pemberville	E. B. Morse.
Peninsula	W. N. Boerstler, M. D.
Perrysburg	J. H. Rheinfrank, M. D.
Perrysville	Geo. W. Shehan.
‡ Petersburg (Coal Grove P. O.)	
‡ Phillipsburg (Center P. O.)	
‡ Pickerington	
‡ Pierce	
Piketon	A. E. Bumgarner, M. D.
Pioneer	W. H. Durbin.
Plain City	M. J. Jenkins, M. D.
Plainfield	J. S. Jenkins.
Pleasant Hill	S. W. Bausman, M. D.
Pleasant Ridge	F. D. Acomb.
‡ Pleasantville	
Plymouth	M. Vance, M. D.
Poland	C. R. Justice, M. D.
Polk	W. H Rhinehart, M. D.
Portage	W. C Philo, Sec'y.
Port Clinton	
Port Jefferson	S. S. Crumbaugh, M. D.
Port Washington	M. W. Nargney.
‡ Port Union	
* Port Williams	S. L. Thorpe.
Powhattan Pt.	J. S. Boone, M. D.
Proctorville	Amos Ripley.
Prospect	C. M. C. Thomas, M. D.
Put-in-Bay	F. W. Binggraf.
Quaker City	F. S. Miskimen, M. D.
Quincy	R. T. Cretcher.
‡ Racine	
Rarden	R. A. Foster, M. D.
Rawson	Louis Henning.
Ravenna	Joseph Gledhill.
Reading	Henry Wachendorf.
Rendville	S. S. Jordan, M. D.
‡ Republic	
Reynoldsburg	F. G. Taylor, M. D.
Richmond (Grand River P. O.)	James Averille.
Richmond, Jefferson county	Samuel Rothacker, M. D.

*Hamlet.
‡ Not organized.

* Richville	
Richwood	W. M. Wood.
Ridgeway	E. B. Crow, M. D.
Ringgold	James Davis, M. D.
Ripley	John P. Tyler, M. D.
Rising Sun	Martin Shively.
Riverside	H. C. Robinson.
‡ Robertsville	
Rockford	T. G. McDonald.
‡ Rochester	
Rock Creek	W. S. Weiss, M. D.
Rocky Ridge	Anson Green.
Roseville	O. M. Norman, M. D.
Rossville (Hagerman P. O.)	E. H. Black, M. D.
‡ Royalton	
Rushsylvania	J. S. Mallory.
Rushville	W. G. Lewis, M. D.
‡ Russelville	
Sabina	J. L. Johnson.
Salesville	J. C. Clark.
Salineville	Ralph Marsh.
‡ Sarahsville	
Savannah	L. S. Cowie.
Scio	M. L. McAdoo, Clerk.
† Sciotoville	
Scott	J. H. Rigor.
Sedalia	E. B. Mead, M. D.
Senecaville	W. Scott, M. D.
Sekitan (Addyston.)	
Seville	P. E. Beach, M. D.
‡ Seven Mile	
Shawnee	H. E. White, M. D.
Shelby	W. S. Anderson, M. D.
‡ Sharon	
Sherrodsville	W. H. Watkins.
Sherwood	E. J. Potter, M. D.
Shiloh	L. F. Henry, M. D.
Shreve	C. H. Lilley.
Sidney	Edwin LeFevre, M. D.
Smithfield	W. H. Wood, M. D.
Smithville	Simon Breneman.
Somerset	W. W. Fulkerson.
‡ Somerford	
Somerville	E. H. Abbott.
South Bloomfield	E. E. Blacker, M. D.
South Brooklyn	R. E. Stickney.
South Charleston	T. G. Farr, M. D.
South Point	James Black, M. D.
‡ South Salem	
South Solon	W. F. McCormick, M. D.
‡ South Webster	
Sparta	S. G. Fowle.

* Hamlet.
† Not incorporated.
‡ Not organized.

Spencerville	William Roush, M. D.
Springborough	C. C. Langsden, M. D.
* Spring Hills	.....
Spring Valley	S. E. Dyke, M. D.
St. Bernard	S. B. Howard, M. D.
St. Clairsville	D. L. Walker, M. D.
St. Mary's	W. B. Shoonover, M. D.
St. Paris	C. A. Offenbacher, M. D.
‡ St. Louisville	.....
Stockport	T. J. Lyne, M. D.
Strasburg	J. C. Schatzbach, M. D.
Stouts P. O	S. B. Grimes, M. D.
‡ Stoutsville	.....
Stryker	George Snyder.
Summerfield	F. Rhodecker.
‡ Summerford	.....
Sugar Grove	T. R. Mason, M. D.
Sunbury	G. H. Gerhardt, M. D.
Swanton	A. B. Lathrop, M. D.
Sycamore	R. S. Galleher, Esq.
‡ Syracuse	.....
Sylvania	Geo. A. Crandall.
Tarlton	J. B. Grove, Clerk.
Taylorsville (Philo P. O.)	J. F. Addison, M. D.
Tippecanoe City	W. H. Strader.
Tiro	W. H. Guiss, M. D.
Thornville	Geo. H. Pugh, M. D.
‡ Thurston	.....
Tontogany	A. Eddmonn, M. D.
Toronto	B. F. Collins, M. D., Sec'y.
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Celina,
Circleville,
Cleveland,
Clifton,
Collinwood
Columbus,
Conneaut,
Cuyahoga Falls,
Delphos,
Deshler,
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Fayette,
Franklin,
Garrettsville,
Geneva,
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ABSTRACT OF REPORTS

... OF ...

DEATHS AND THEIR CAUSES

IN THE FOLLOWING CITIES AND
TOWNS IN OHIO

... FOR THE ...

YEAR ENDING DECEMBER 31, 1894.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JANUARY, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Akron	27,601	33	14.35	6	3	6	4	....	....	....	....	....	....	....	....	....	....	....	....	4	....	4	18	1	3	2	3	....	2	3	....	4	5	....	2
Canton	26,189	23	10.54	6	2	2	....	....	....	....	....	....	....	....	....	....	....	1	....	6	....	6	6	....	....	....	....	....	2	1	....	2	7	2	....
*Chillicothe	11,288	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cincinnati	296,908	527	21.29	160	49	104	21	1	2	....	3	2	1	....	....	1	....	18	7	102	18	63	271	8	9	43	16	8	29	15	....	67	40	21	48
Cleveland	261,353	341	15.26	68	47	56	21	....	9	4	....	....	....	....	....	6	....	9	1	45	7	33	198	5	11	9	28	13	23	7	....	63	19	10	33
Columbus	88,150	87	11.84	12	9	22	7	1	1	....	....	2	....	....	....	1	....	4	6	23	4	18	27	3	....	2	1	....	5	1	....	9	6	2	7
Dayton	61,220	86	16.04	9	4	8	2	....	....	....	....	1	....	....	....	....	....	1	1	16	2	12	49	2	1	3	....	3	6	3	1	9	4	5	7
East Liverpool	10,956	12	13.13	7	....	6	....	....	....	....	....	....	1	....	....	1	....	....	4	1	....	1	3	1	....	....	....	....	....	2	....	....	2	....	....
Findlay	18,553	20	12.93	4	....	8	....	....	2	....	....	....	....	....	1	....	....	....	....	2	1	....	6	....	1	....	....	....	2	....	....	2	1	3	2
Hamilton	17,565	23	15.70	5	....	5	1	....	1	....	....	....	....	....	1	....	....	....	....	2	1	1	11	....	....	3	2	1	1	....	....	3	3	2	2
Ironton	10,939	15	16.45	4	2	2	1	....	....	....	....	....	....	....	....	....	....	1	....	5	....	5	7	....	....	1	2	....	....	....	....	....	1	....	....
*Lima	15,981	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mansfield	13,473	9	8.01	1	1	3	....	....	....	....	....	....	....	....	....	1	....	1	....	2	....	2	3	1	....	....	....	....	1	....	....	....	1	....	....
Massillon	10,092	13	15.45	....	....	7	4	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	3	1	....	....	....	....	1	....	....	....	....	2	....
Newark	14,270	20	16.81	2	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	4	2	2	12	1	....	....	1	1	4	1	....	4	3	....	3
Portsmouth	12,394	18	16.62	1	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....	5	1	3	9	....	1	....	....	....	4	1	....	1	2	1	2
Sandusky	18,471	11	7.15	....	....	4	....	1	1	....	....	....	....	....	....	....	....	2	....	....	....	....	7	1	....	....	....	....	....	....	....	....	2	....	....	....
Springfield	31,895	27	10.15	5	2	2	....	....	1	....	....	....	....	....	....	....	....	....	....	6	1	5	7	....	....	....	1	1	2	1	....	....	10	2	4
Steubenville	12,394	12	10.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tiffin	10,801	14	15.54	....	....	8	5	....	....	....	....	....	....	....	....	2	....	1	....	2	1	1	3	....	....	....	....	1	2	....	....	....	....	1	....
Toledo	81,434	111	16.35	14	14	22	8	....	....	....	....	1	1	....	....	1	....	2	....	10	1	9	58	3	3	5	2	1	6	3	....	12	17	4	18
Youngstown	33,220	44	15.89	8	1	6	....	....	....	....	....	1	....	....	....	....	....	1	1	9	3	5	22	2	1	1	1	1	4	3	....	3	4	3	6
Zanesville	21,009	23	13.13	3	1	4	....	....	....	....	....	....	....	....	....	....	....	....	1	6	2	4	8	....	....	....	1	....	2	1	....	3	4	1	2
Totals	1,079,887	1,469	16.32	315	136	277	74	3	17	4	4	7	3	....	2	13	....	41	21	251	44	174	728	29	30	69	58	30	96	42	1	184	129	59	126

* Failed to report. Deaths from la grippe: Akron 2, Canton 1, Cincinnati 29, Columbus 6, Dayton 2, Mansfield 1, Massillon 3, Newark 1, Springfield 1, Toledo 6, Youngstown 2, Zanesville 3.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JANUARY, 1894.

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Alliance	7,607	10	15.77	1	1	3	1													4	1	3	2	1									1		
Bellaire	9,934	16	19.02	2	4	5			1		3							1		2	1	1	7			1	2	2	1			1	1	1	1
Bucyrus	5,974	11	21.92	1																2	1	1	8	2		2			1	3				1	
*Circleville	6,556																																		
Defiance	7,694	8	12.47			3	1									2				2	1	1	3		1				1			1			
Delaware	8,224	11	15.90		3	7								5	1					3		3	1						1						1
Fremont	7,141	10	16.80		3	3	2											1					5		1		1		1			2			1
Fostoria	7,070	13	22.06		4	5	2		1									1		2		2	6		1	1			4						3
Galion	6,326	3	5.69			2											1		1				1						1						
Gallipolis	4,498	5	13.34																	1		1	3					1				2	1		
Greenville	5,473	7	15.43	1																1	1		6	2	1				3						
*Kenton	5,557																																		
Lancaster	7,555	5	7.94			1												1		1		1	3	1	1										
*Marietta	8,273																																		
Marion	8,327	8	11.52			3	1							1				1		4		4											1		
Martin's Ferry	6,250	12	21.44	4	1	8	1											2		2		2	2			1						1			1
Middletown	9,364	4	5.12			1														2		2	1						1						
Mt. Vernon	6,027	8	15.62			1							1							1		1	5	1					2			1		1	
Norwalk	7,195	9	15.01			1			1														5		1	1	1		1			1	1	2	
Piqua	9,090	22	27.94	2	1	1						1								3	1	2	14	1	2	1			3	2		3	3	1	2
Pomeroy	4,726	4	10.15			1												1		2	1	1	1						1						
Salem	5,780	7	14.53	3																2	1	1	3						1	1		1	2		
Troy	4,494	9	29.12			2	1													4	1	3	1							1			1	1	1
Urbana	6,510	7	12.90	1	1	1	1													3		2	2						1			1	1		
Warren	5,973	4	8.03																	1		1	2									1		1	1
Wash'gton C. H.	5,742	7	14.62		2	2	1																3												1
Wellston	4,377	8	21.93	2	3	4	2													1	1		3			2		1							2
Wellsville	5,247	9	20.58			5			1						1	3				2	1	1	2						1			1			
Wooster	5,901	8	16.26			3	1						1							1	1		4		1										
*Xenia	7,301																																		
Totals	165,536	223	16.07	17	24	57	14		4		3	1	2	6	2	5	1	9	1	46	12	33	93	8	9	9	4	4	24	7		16	12	8	14

* Failed to report. Deaths from la grippe: Alliance 2, Middletown 1, Troy 1, Washington C. H. 1, Wellston 2.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF FEBRUARY, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Akron	27,601	33	14.35	5	1	7	2	....	....	....	1	....	....	....	1	....	1	....	....	7	3	4	13	4	2	....	1	1	3	....	....	2	4	2	4
Canton	26,189	20	9.17	4	1	2	....	....	....	....	....	....	....	....	....	1	....	1	....	7	3	4	7	....	1	....	3	....	2	....	....	1	4	....	....
Chillicothe	11,288	7	7.44	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	6	....	....	1	1	1	....	....	....	3	....	....	2
Cincinnati	296,908	451	18.23	80	54	60	16	1	3	....	....	2	1	....	....	....	....	11	5	88	15	58	268	14	10	37	17	14	23	14	....	56	28	12	54
Cleveland	261,353	341	15.65	89	49	72	19	....	7	6	....	1	1	5	....	3	....	7	2	38	12	19	192	3	11	12	31	5	16	5	4	64	22	17	37
Columbus	88,150	116	15.40	24	12	17	3	....	1	....	....	1	....	1	3	1	....	5	....	17	3	13	60	3	2	4	2	6	7	5	....	21	6	7	3
Dayton	61,220	92	18.03	14	9	18	6	....	2	....	....	....	....	3	....	1	....	1	1	19	5	14	40	....	....	....	4	1	13	2	....	10	12	3	11
East Liverpool	10,956	19	20.81	3	3	8	....	....	2	....	....	....	....	....	1	1	....	....	4	3	....	2	6	....	1	....	....	....	3	1	....	1	....	2	2
Findlay	18,553	18	11.64	5	2	4	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	9	....	....	....	....	....	1	....	....	4	2	1	1
Hamilton	17,565	13	8.88	3	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	3	6	....	1	....	1	....	....	....	....	1	1	1	1
Ironton	10,939	22	24.13	4	7	5	1	....	....	....	1	....	....	....	....	1	....	....	....	5	....	4	8	2	....	1	....	..	....	2	....	1	1	2	....
Lima	15,981	10	7.50	....	....	6	5	....	....	....	....	....	....	....	....	....	....	1	....	1	....	1	3	....	....	....	1	....	1	....	....	1	....	....	....
Mansfield	13,473	8	7.12	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	4	1	....	....	....	....	1	....	....	2	3	....	....
Massillon	10,092	17	20.21	....	....	4	4	....	....	....	....	....	....	....	....	....	....	....	....	3	....	3	4	3	....	....	....	....	....	....	....	1	1	5	....
Newark	14,270	10	8.40	2	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	5	....	....	....	1	....	3	1	....	....	2	1	3
Portsmouth	12,394	14	13.55	1	1	1	....	....	....	....	....	....	....	....	....	....	....	1	....	5	2	3	5	....	....	....	....	....	2	1	....	2	2	1	....
Sandusky	18,471	12	7.26	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2	7	....	....	....	....	....	....	2	....	1	1	....	....
Springfield	31,895	35	12.54	2	3	1	....	....	....	....	....	....	....	....	....	....	....	1	....	8	....	7	14	....	1	2	1	2	3	2	....	....	11	1	7
Steubenville	13,394	11	9.85	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tiffin	10,801	15	16.66	....	....	7	2	....	1	....	....	....	....	1	....	2	....	1	....	1	....	1	4	....	....	....	....	....	3	....	....	1	3	....	....
Toledo	81,434	104	15.32	24	4	17	2	1	1	....	1	....	2	1	....	....	....	....	....	10	1	8	56	2	4	7	5	1	7	....	....	11	17	4	14
Youngstown	33,220	33	11.90	6	3	4	....	....	....	....	....	....	1	....	....	....	....	....	....	6	1	4	20	2	1	....	4	....	1	1	....	7	3	....	4
Zanesville	21,009	27	15.42	2	2	2	....	....	....	....	....	....	....	....	1	....	....	1	....	2	1	1	19	1	3	....	....	....	3	1	....	7	4	....	1
Totals	1,107,156	1,428	15.47	272	153	239	60	2	17	6	3	4	5	11	6	10	1	31	12	231	47	153	756	35	37	64	72	31	92	37	*4	197	122	59	144

* Failed to report. Deaths from la grippe: Akron 2, Canton 1, Cincinnati 29, Columbus 6, Dayton 2, Mansfield 1, Massillon 3, Newark 1, Springfield 1, Toledo 6, Youngstown 2, Zanesville 3.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF FEBRUARY, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases	Total violence.	Premature and still-births.
Alliance	7,607	7	11.04	2	1															1		1	4									1	1	1	
Bellaire	9 934	14	16.91	6	2	2										2				1		1	7				1					6	4		2
Bucyrus	5,974	9	18.07	2		3	1													3	1	2	2							1			1		
*Circleville	6,556																																		
*Defiance	7 694																																		
Delaware	8,224	14	20.42	1	4	7								7						1	1		5		1				1	1			2		1	1
Fremont	7,141	6	10.08		2	1									1					2		2	3		1								2			
Fostoria	7,070	1	1.41																				1						1						2
Galion	6,32[illegible]	10	18.97	1		3	2							1						1		1	3	1					2				2	1	
Gallipolis	4,498	5	13.34																	2		2	2						2			1	1		
Greenville	5,473	7	15.34	2																2		2	5			1			1			3			
*Kenton	5,557																																		
Lancaster	7,555	8	12.70																	2		2	4	1	1				1				1	1	
*Marietta	8,273																																		
Marion	8,327	11	15.85			3	1											1		1	1		4	1					1			2		2	
Martin's Ferry	6,250	6	11.52	2		3												3		1		1	1									1			
Middletown	9,364	7	8.97																	1			5	1		2			1			1		1	
Mt. Vernon	6,027	12	23.89		2															4	1	3	7				2			2	1	2		1	
Norwalk	7,195	12	20.00	1																4	1	3	4		2				1		1			4	
Piqua	9 090	13	17.16	1	1															5	1	4	6	1				1	1			2	2		
Pomeroy	4,726	2	5.08			1									1					1		1													2
Salem	5,780	4	8.30	1	1	2			1														2		1		1								
Troy	4,494	4	10.68	1	1															2	1	1	2	1						1					
Urbana	6,510	2	3.68																				2	1											
Warren	5,973	4	8.04																	1		1	3	1											
Wash'gton C. H.	5,742	6	12.54		2	3						1						1					2											1		
Wellston	4,377	4	10.96			2									1					1		1											1		2
Wellsville	5,347	11	25.15			8	1								2	3		1					3					1	1			1			
*Wooster	5 901																																		
*Xenia	7 301																																		
Totals	152,941	179	14.20	20	16	38	5		1				1	8	5	5		6	1	36	7	28	77	8	6	3	4	3	13	4	2	24	14	12	9

*Failed to report. Deaths from la grippe: Alliance 2, Middletown 1, Troy 1, Washington C. H. 1, Wellston, 2.

ABSTRACTS OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING THE MONTH OF MARCH, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases	Total violence.	Premature and still-births.
Akron	27,601	82	13.91	4	2	3	1	....	....	....	....	....	....	....	....	....	....	....	....	4	2	2	18	....	....	2	....	2	3	2	....	9	6	1	2
*Canton	26,189	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chillicothe	11,288	22	23.38	1	3	1	....	....	....	....	1	....	....	....	....	....	....	....	....	7	....	6	12	2	1	....	....	....	2	3	....	2	....	2	....
Cincinnati	296,908	536	21.62	109	70	72	20	1	5	....	6	1	....	....	....	1	....	15	6	122	18	82	294	8	17	24	14	9	23	32	1	70	30	18	53
Cleveland	261,353	390	17.52	83	53	69	15	†	6	†	1	1	1	4	....	7	....	8	6	67	19	41	211	8	10	7	42	12	27	14	....	55	28	15	74
Columbus	88,150	102	13.88	18	11	10	2	....	1	....	....	....	....	....	....	2	....	2	....	21	3	16	52	....	3	3	6	2	6	6	....	18	2	5	10
Dayton	61,220	102	19.83	18	7	14	8	....	3	....	....	....	....	2	....	....	....	....	....	22	3	22	46	4	5	....	3	1	....	3	....	3	9	4	11
East Liverpool	10,956	28	30.66	....	....	10	....	....	....	....	....	....	....	....	....	....	....	1	8	1	....	....	15	....	....	1	2	....	1	1	1	5	1	1	....
Findlay	18,553	19	12.29	2	2	3	....	....	....	....	1	....	....	....	....	....	....	1	....	5	1	....	7	....	2	....	....	....	1	....	....	....	4	....	....
Hamilton	17,565	25	17.07	9	4	4	....	....	4	....	....	....	....	....	....	....	....	....	....	3	....	2	14	....	1	....	2	1	3	....	....	6	3	1	2
Ironton	10,939	17	18.64	3	1	4	....	....	....	....	....	....	....	....	....	1	....	2	....	4	2	2	7	....	....	....	1	....	1	....	....	3	2	....	....
*Lima	15,981	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mansfield	13,473	18	16.03	3	2	1	1	....	....	....	....	....	....	....	....	....	....	....	....	3	1	2	10	1	....	....	....	....	3	2	....	3	3	1	....
Massillon	10,092	11	13.07	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	8	2	....	1	1	....	....	1	....	....	1	....	....
Newark	14,270	13	10.93	2	3	1	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2	7	1	....	....	2	....	1	2	....	....	2	1	2
Portsmouth	12,394	21	20.33	4	....	3	1	....	....	....	....	....	....	1	....	....	....	....	....	7	2	5	8	....	1	....	....	....	1	1	....	4	3	....	2
Sandusky	18,471	17	11.04	3	....	2	....	....	....	....	....	....	....	....	....	....	....	1	....	4	....	4	10	1	....	....	1	....	....	....	....	1	1	....	3
Springfield	31,895	45	16.92	1	3	6	1	....	....	....	1	....	....	1	....	....	....	1	....	11	....	10	21	3	2	....	1	....	7	1	....	2	3	....	6
Steubenville	13,394	19	17.22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tiffin	10,801	14	15.55	....	....	4	....	....	....	....	....	....	....	....	....	4	....	....	....	2	....	2	3	....	....	....	1	....	....	1	....	1	5	....	....
Toledo	81,434	125	18.42	27	10	25	2	....	1	....	1	1	....	4	5	....	....	3	2	19	5	12	62	2	....	2	6	2	9	6	....	10	12	7	18
Youngstown	33,220	26	9.39	5	2	5	1	....	....	....	....	1	1	....	....	....	....	....	....	3	....	2	14	1	....	....	1	1	4	2	....	5	1	3	3
Zanesville	21,509	18	10.18	2	2	3	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	1	10	....	1	....	....	1	1	1	2	....	4	2	1	2
Totals	965,076	1,600	19.89	294	175	241	53	1	20	....	10	5	2	10	7	15	....	34	23	315	56	216	829	33	43	40	83	31	94	78	2	201	118	60	188

* Not reported.

† Cholera infantum and cholera morbus 9.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF MARCH, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Mal-rial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Alliance	7,607	12	18.90	1	2	2														2		1	6									5		2	1
Bellaire	9,934	20	24.15		4	2	1									1				4		4	9		1		2	3	1	1		1	3	2	2
Bucyrus	5,974	9	18.07	1		1	1													3		3	4	1				1	1			1	1		
*Circleville	6,556																																		
Defiance	7,694	7	10.92															1		1	1		6			1			2			3			3
Delaware	8,224	9	13.13		2	1														2	1	1	6	1		1		1	1			2			
Fremont	7,141	5	8.40			2												1	1				3	1					1			1			
Fostoria	7,070	3																					2						2						2
*Galion	6,326																																		
Gallipolis	4,498	9	24.01																	1		1	8		1		1		1	1		4			
Greenville	5,473	6	13.15	1																2		2	4	2					1			1			
*Kenton	5,557																																		
Lancaster	7,555	8	12.57																	2	1	1	5						3				1		
*Marietta	8,273																																		
Marion	8,327	12	17.29	1		7							1	3				1		1		1	4				1		2	1					
Martin's Ferry	6,250	10	19.20			4			1									3		5		4	1									1			
Middletown	9,364	6	7.69			1												1		2		2	3	1				1				1			
Mt. Vernon	6,027	6	11.94	1		1			1											1		1	1						1				1	2	
Norwalk	7,195	7	11.66	2																2		2	5		1				3		1				
Piqua	9,090	13	17.16	3	2	2								1				1		2		2	4			1				2		1	4	1	
Pomeroy	4,726	5	12.69			1														2	1	1	2	1											
Salem	5,780	6	12.45	1	1	1								1						1		1	2	1								1	1	1	
Troy	4,494	6	16.02	3																2	2		3	1					2					1	1
Urbana	6,510	5	9.21		1															2		2	3						1	1	1				1
Warren	5,974	8	16.07	1		4			1				1										2			1							1	1	
Wash'gton C. H.	5,742	6	12.54	2	2	3			1						1	1							2		1					1			1		
Wellston	4,377	7	19.19	4		1													1				3			1	2						3		
Wellsville	5,247	11	25.15			7	1						1		1	2		1	1	2	1	1	2				1					1			
*Wooster	5,901																																		
*Xenia	7,301																																		
Totals	163,572	196	14.80	21	14	40	2		4				3	5	2	4		9	2	30	7	30	90	9	4	5	7	6	22	7	2	28	16	10	10

* Not reported.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF APRIL, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera Infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measels.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Akron	27,601	33	14.35	9	2	5	....	....	....	....	2	....	1	....	....	....	....	....	1	4	1	3	18	1	2	1	4	1	2	3	....	4	6	....	5
Canton	26,189	26	11.91	8	4	5	2	....	1	....	....	....	....	....	....	....	....	....	1	4	....	4	13	2	....	2	1	....	....	....	....	....	....	....	....	....
Chillicothe	11,288	12	12.75	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	1	1	7	....	....	....	....	....	2	2	....	1	....	1	2
Cincinnati	296,908	475	14.15	78	57	67	26	1	3	....	3	1	....	....	....	1	....	10	3	102	14	67	265	6	10	30	15	13	20	18	3	58	23	18	37
Cleveland	261,353	402	18.75	72	79	78	19	†	6	†	2	2	....	15	....	10	....	4	4	61	8	46	218	5	10	13	34	15	16	9	....	71	30	15	55
Columbus	88,150	112	15.25	27	14	13	2	....	....	....	....	1	1	5	....	....	....	....	....	17	2	14	62	1	2	5	8	9	11	5	....	16	10	5	13
Dayton	61,220	97	19.01	21	8	12	6	....	....	....	1	....	....	1	....	....	....	2	....	18	3	15	48	3	5	....	4	3	6	3	....	11	10	8	6
East Liverpool	10,956	11	12.04	5	3	5	....	....	1	....	....	....	....	....	....	....	....	....	4	....	....	....	4	....	1	....	2	....	....	....	....	....	1	....	2	....
Findlay	18,553	20	12.94	3	2	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11	....	2	1	....	....	2	....	....	....	6	3	2	....
Hamilton	17,565	16	10.93	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	3	10	....	....	1	....	....	4	....	....	....	....	1	....	2
Ironton	10,939	11	12.06	1	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	3	....	3	7	....	1	1	....	....	....	....	....	....	....	....	....	....
Lima	15,981	9	6.76	....	2	2	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	5	1	....	....	1	....	2	....	....	1	....	2	....
Mansfield	13,474	14	2.47	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	3	8	1	1	....	1	....	....	....	....	....	2	2	....	....
* Massillon	10,092	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Newark	14,270	17	14.29	2	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2	9	....	1	1	....	1	3	1	....	2	4	2	2
Portsmouth	12,394	12	11.62	1	4	3	....	....	....	....	....	1	....	....	1	....	....	....	....	2	....	2	3	....	....	....	....	....	2	....	....	....	4	....	2
Sandusky	18,471	10	6.49	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	7	1	....	....	....	....	....	1	....	....	....	1	....
Springfield	31,895	27	10.16	5	2	3	....	....	2	....	....	....	....	....	....	....	....	1	....	6	1	4	12	2	1	1	....	1	3	2	....	....	7	2	3
Steubenville	13,394	14	12.54	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tiffin	10,801	11	12.22	....	....	3	1	....	....	....	....	....	....	....	....	2	....	....	....	3	....	3	3	....	....	....	....	....	2	....	....	1	2	....	....
Toledo	81,434	106	15.61	23	16	18	....	3	1	....	1	....	6	....	....	....	....	3	1	20	2	9	47	2	....	5	3	2	7	....	....	7	17	4	....
Youngstown	33,220	34	11.38	....	....	3	....	....	....	....	1	....	....	....	....	....	....	....	....	9	4	5	14	2	....	1	....	....	3	....	....	5	4	3	6
Zanesville	21,009	26	14.85	4	....	3	....	....	1	....	....	....	....	....	1	....	....	1	....	7	1	6	13	1	1	....	1	2	1	....	....	3	2	1	3
Totals	1,097,064	1,495	16.35	265	196	226	56	4	16	....	10	5	9	21	3	13	....	22	14	269	37	190	794	28	37	62	74	47	86	44	3	189	125	66	136

* Not reported.

† Cholera infantum and cholera morbus, 5.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF APRIL, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Alliance	7,607	5	7.88			1	1																4												
Bellaire	9,934	11	13.28	2	1	1												1		1		1	3			1						2	4	2	1
Bucyrus	5,974	7	14.06			1	1													1		1	5							1		4			
*Circleville	6,556																																		
*Defiance	7,994																																		
Delaware	8,224	7	10.21		1															2		2	5	1					2			2			
Fremont	7,141	6	10.08																	3		3	2	1				1						1	
Fostoria	7,070	11	18.67	4		1	1													1		1	9						5	4					3
Galion	6,326	3	5.67																	1		1	2				1					1			
Gallipolis	4,498	4	10.67			1	1																3						1			2			
Greenville	5,473	1	2.19																	1		1													
*Kenton	5,557																																		
Lancaster	7,555	4	6.35	2		1		1												1		1	1	1									1		
*Marietta	8,273																																		
Marion	8,327	8	11.53			3								3						2		2	2										1		1
Martin's Ferry	6,250	11	21.12	4		1												1					5		1				1			3		1	2
Middletown	9,364	7	8.97	1	1															3	1	2	4	1						1		2			
Mt. Vernon	6,027	9	17.91	1		3								1						1		1	2									1	2	1	
Norwalk	7,195	7	11.67																	3	1	2	4		2				1			1			
Piqua	9,090	14	18.48	4																6		6	2	1						1			6		
Pomeroy	4,726	7	17.56		1															2		2	3						1			2		2	
Salem	5,780	6	12.45		2	2								1					1				3	1					1			1			1
Troy	4,494	10	26.70																	2	1	1	7	2				1	3			1		1	
Urbana	6,510	8	11.06																				5						3	1		1	1		2
Warren	5,973	5	10.54	2		1														1	1		2	2									1		
Wash'gton C. H.	5,742	9	18.81	2	2															2		2	6	2								4		1	1
Wellston	4,877	5	13.70	3																			5					1	1						
Wellsville	5,247	8	18.29	3																														1	
*Wooster	5,901																																		
*Xenia	7,301																																		
Totals	158,904	171	12.91	28	8	16	4	1						5				2	1	33	4	29	84	12	3	1	1	2	19	8		27	16	10	11

*Not reported.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF MAY, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Akron	27,601	37	16.09	6	4	6	4	....	....	....	....	....	1	....	....	....	....	....	....	6	1	5	16	1	4	3	2	1	1	....	....	4	7	2	5
Canton	26,189	28	10.53	10	1	3	....	....	....	....	....	....	....	....	....	....	....	....	3	6	2	4	15	1	....	....	4	1	2	....	....	4	....	1	....
Chillicothe	11,288	7	7.44	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1	....	4	1	....	....	....	....	1	....	....	1	....	1	....
Cincinnati	296,908	455	15.38	68	63	69	15	....	8	2	4	....	....	....	....	....	....	10	8	106	16	66	231	12	6	14	10	17	29	22	2	42	31	18	67
Cleveland	261,353	483	22.17	118	13	85	12	8	11	†	3	1	....	22	....	11	....	1	11	60	11	37	293	5	7	31	48	17	36	13	1	105	25	20	67
Columbus	88,150	123	16.74	27	10	9	1	†	....	....	2	1	....	....	....	....	....	....	2	25	4	21	58	2	2	2	4	7	12	10	....	12	2	12	7
Dayton	61,220	107	20.97	17	13	19	15	....	1	....	....	....	1	....	....	....	....	....	....	19	5	13	52	....	2	5	3	4	1	4	....	2	12	4	4
East Liverpool	10,956	8	8.76	....	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	1	1	....	2	....	....	....	1	....	....	....	....	....	4	....	....
Findlay	18,553	12	7.76	2	1	5	1	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	3	1	....	....	....	....	....	....	....	....	....	2	1	....
Hamilton	17,565	21	14.34	5	1	1	....	....	....	....	....	....	....	....	....	1	....	....	....	6	2	3	10	....	....	....	2	....	2	1	....	2	....	4	5
Ironton	10,939	18	14.26	4	....	3	....	....	1	....	....	....	....	....	....	....	....	....	1	1	....	1	5	....	1	....	....	....	3	....	....	....	2	....	2
Lima	15,981	15	11.32	....	....	5	....	1	....	....	....	....	....	....	....	1	....	1	....	3	1	2	8	....	....	....	....	1	....	....	....	1	....	1	....
Mansfield	13,473	14	12.47	1	1	2	1	....	....	....	....	....	....	....	....	....	....	....	1	2	....	2	9	....	....	....	....	2	4	....	....	1	1	....	....
*Massillon	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Newark	14,270	16	13.45	2	1	2	....	....	1	....	....	1	....	....	....	....	....	....	....	3	....	3	7	....	2	2	....	....	3	....	....	....	2	2	1
Portsmouth	12,394	19	18.31	2	2	2	....	....	....	....	....	....	....	....	....	....	....	1	....	3	....	3	12	....	2	....	....	4	3	1	....	2	1	1	5
Sandusky	18,471	10	6.49	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	7	....	....	....	....	....	2	1	....	1	2	....	....
Springfield	31,895	33	12.42	8	4	1	....	....	1	....	....	....	....	....	....	....	....	....	....	6	2	3	20	....	2	1	1	4	6	3	....	1	7	2	4
Steubenville	13,394	9	8.06	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tiffin	10,801	8	8.88	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	2	....	2	3	....	....	....	....	....	3	....	....	....	2	....	....
Toledo	81,434	121	18.27	20	19	30	8	2	5	....	....	2	2	6	2	....	....	....	1	17	6	5	47	2	....	2	6	6	2	....	1	9	8	9	11
Youngstown	33,220	36	13.00	4	9	5	1	....	....	....	....	....	1	1	....	....	....	....	2	7	....	7	20	2	1	2	2	....	2	....	....	4	1	3	7
Zanesville	21,009	14	7.99	2	1	3	....	....	1	....	....	....	....	....	....	....	....	....	....	3	....	3	7	....	2	....	....	....	2	....	....	....	....	....	....
Totals	1,097,064	1,592	17.41	291	243	352	58	11	31	2	9	5	5	29	2	14	....	13	22	280	52	181	829	27	31	62	83	64	114	55	4	191	109	81	185

*Not reported.

† Cholera infantum and cholera morbus, 10.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF MAY, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Alliance	7,607	9	14.19		1															3	1	2	4										1	1	4
Bellaire	9,934	10	12.08	5	2	5					1								4				4							1		3	1		
Bucyrus	5,974	7	14.06																	1		1	6					2	2						
*Circleville	6,556																																		
*Defiance	7,694																																		
Delaware	8,224	6	8.75																	4	1	3	2	2											
Fremont	7,141	10	16.80	1	1															3	1	2	5		2		1			2					
Fostoria	7,070	10	16.97	1	2	1	1													1	1		8						6	2					2
Galion	6,326	3	5.69																	1		1													
Gallipolis	4,498	5	13.34																	1		1	3		2				1	1					
Greenville	5,473	5	10.99	1		2							1						1	2	1	1	1						1						
*Kenton	5,557																																		
Lancaster	7,555	7	11.12	2																1		1	3	1									1	3	
*Marietta	8,273																																		
Marion	8,827	8	11.52			4			1					2						3		3	1					1							
Martin's Ferry	6,250	3	5.75			1												1					2							1		1			1
Middletown	9,864	7	8.97	4	3	1													1				6		1					2		3			
Mt. Vernon	6,027	11	21.90			2												1		2	1	1	7		2			1	2			2			
Norwalk	7,195	8	13.34			1										1				2	1	1	5		1				2			2		1	
Piqua	9,090	17	22.44	5	4	2			1										1	4	1	3	7				2		1	1		3	4		1
*Pomeroy	4,726																																		
Salem	5,780	11	22.84	3	1	3			1										2	1	1		5		1			1	2		1		2		1
Troy	4,494	3	8.01																				3	1	1				1						
Urbana	6,510	3	5.58																	2	1	1	1						1						2
Warren	5,973	3	6.02																	1			2												1
Wash'gton C. H.	5,742	8	16.72	2	2	1													1	4		4	3						1			2			2
Wellston	4,377	4	10.96		2																		4	1			1								
Wellsville	5,247	9	20.58	4		2		1						1									1											1	
*Wooster	5,901																																		
*Xenia	7,301																																		
Totals	154,178	167	12.81	28	18	25	1	1	2		1		1	3		1		2	10	36	10	25	83	5	9	1	4	5	19	9	1	18	2	8	14

*Not reported.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JUNE, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental disease.	Total violence.	Premature and still-births.
Akron	27,601	35	15.21	5	8	7	4	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	6	2	4	15	1	2	.....	1	.....	2	2	.....	4	6	.....	2
Canton	24,189	25	11.68	7	3	6	1	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	2	5	.....	5	7	1	.....	.....	3	.....	2	1	.....	.....	2	2	.....
Chillicothe	11,284	12	12.75	1	1	4	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	2	3	.....	3	3	.....	1	.....	.....	.....	1	.....	.....	1	.....	2	1
Cincinnati	296,908	489	19.76	111	55	80	12	14	6	2	8	.....	.....	.....	.....	1	.....	8	7	104	16	65	236	15	6	13	14	15	31	30	.....	29	39	30	48
Cleveland	261,353	506	23.23	146	126	108	8	†	2	†	2	1	.....	28	.....	8	.....	4	12	54	10	32	281	4	4	30	53	10	16	20	1	107	38	25	46
Columbus	88,150	101	13.75	26	11	23	1	2	.....	.....	.....	1	.....	1	.....	2	.....	5	9	24	4	20	30	.....	.....	3	2	2	2	8	.....	8	3	7	2
Dayton	61,220	85	16.66	14	6	12	5	1	3	.....	.....	.....	1	.....	.....	1	.....	.....	.....	19	1	11	42	1	1	2	.....	4	7	2	.....	1	8	3	7
East Liverpool	10,956	10	10.95	8	1	6	1	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....	.....	2	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	1
Findlay	18,553	4	2.59	.....	1	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hamilton	17,565	23	15.70	4	1	4	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	7	1	5	8	.....	.....	1	1	.....	2	.....	.....	1	2	2	2
Ironton	10,939	18	19.75	2	2	5	.....	2	.....	.....	1	.....	.....	.....	.....	.....	.....	2	.....	9	2	6	3	.....	.....	.....	.....	.....	1	1	.....	.....	1	.....	2
Lima	15,981	18	13.51	.....	.....	4	.....	1	1	.....	.....	.....	.....	.....	1	.....	.....	1	.....	2	.....	2	3	.....	1	.....	1	.....	.....	1	.....	.....	.....	9	.....
Mansfield	13,473	9	6.01	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	3	6	1	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....
*Massillon	10,092	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newark	14,270	13	10.93	1	1	2	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	3	1	2	4	1	.....	.....	1	.....	2	.....	.....	.....	2	2	1
Portsmouth	12,391	23	12.58	.....	.....	7	.....	.....	.....	.....	1	2	2	.....	.....	.....	.....	.....	.....	2	.....	3	3	1	.....	1	.....	.....	1	.....	.....	.....	3	1	.....
Sandusky	18,471	7	4.54	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	5	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....
Springfield	31,895	46	17.30	.....	.....	4	.....	2	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	7	1	6	28	1	5	1	1	5	3	2	.....	.....	5	2	2
Steubenville	13,394	22	19.71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tiffin	10,801	13	14.44	.....	.....	3	2	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	1	1	5	3	1	1	.....	.....	.....	.....	.....	.....	3	.....	.....
Toledo	81,431	95	14.05	18	12	17	1	3	1	.....	.....	.....	.....	6	.....	.....	.....	1	4	19	4	6	39	.....	1	4	5	2	2	.....	.....	5	12	8	13
Youngstown	33,220	33	11.92	8	6	7	.....	.....	.....	.....	2	.....	1	3	.....	.....	.....	.....	.....	5	1	3	18	.....	3	2	2	1	3	2	.....	3	2	2	7
Zanesville	21,009	24	13.18	4	1	5	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	1	1	9	.....	3	.....	.....	.....	1	3	.....	.....	4	3	.....
Totals	1,097,064	1,613	17.62	357	235	307	36	34	14	2	14	7	5	38	2	14	.....	23	39	282	45	178	748	29	30	58	84	41	76	73	1	161	130	98	134

* Not reported.

† Cholera infantum and cholera morbus, 81.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JUNE, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Alliance	7,607	6	9.47																	1	1		3										1		1
Bellaire	9,934	13	15.69	1	3	2										1		1		2		2	3					1		1		1	4	2	
Bucyrus	5,974	11	22.09	2																2		2	4						4						
*Circleville	6,556																																		
Defiance	7,694	14	21.83			4				2					1			1		2		2	1			1									
*Delaware	8,224																																	7	
Fremont	7,141	6	10.08	3																1	1		4	2					1	1			1		1
Fostoria	7,070	4	6.49			2			1														2						2						1
Galion	6,326	3	5.69		1															2	1	1	1	1											
Gallipolis	4,498	4	10.67			1													1	2		2											1		
Greenville	5,473	7	15.55	1	2	3							1			1			1				4			1		2	1						
*Kenton	5,557																																		
Lancaster	7,555	10	15.59	1																2	1	1	7	2					2				1		2
*Marietta	8,273																																		
Marion	8,327	13	18.73			6		1	2					1				1	1	1	1		4									1	1	1	
Martin's Ferry	6,250	11	21.12	4		5		1	1									2	1	1		1	3	1				1		1			1	1	1
Middletown	9,364	10	12.81	3		4		2			1									4	2	2	1		1									1	
Mt. Vernon	6,027	9	13.44																	5		5	2	1								1	2		1
Norwalk	7,195	5	8.34																	2		2	2				1			1				1	
Piqua	6,090	15	19.80	3	4	4												1	3	2		2	2		1					1			7		
Pomeroy	4,726	4	10.15		2	3		1	1									1		1		1													
Salem	5,780	7	14.53	1		1			1														5						2			2	1		
Troy	4,494	7	18.69																	3		2	3		1								1		
Urbana	6,510	6	11.04		1	1														3	1	2	2						1			1			
Warren	5,973	1	2.01																															1	
Wash'gton C. H.	5,742	10	20.89	2	3	2														4		4	2			1				1			2		
Wellston	4,377	11	30.16	2	6	2		1	1														1	1									8		
Wellsville	5,247	8	18.29	2		2		2												2		2	3						1					1	
*Wooster	5,901																																		
Xenia	7,301	14	23.01	5	1	5			1			1						1	1	1		1	8		1	1		1	3	1		1			
Totals	159,712	209	15.70	30	28	47		8	8	2	1	1	1	1	1	2		8	8	43	8	34	67	8	4	4	1	5	17	7		7	31	15	7

* Not reported.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JULY, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diph theria	Cholera infantum	Cerebro spinal meningitis	Cholera morbus	Diarrhoeal diseases.	Dysentery	Malarial fevers.	Measles.	Puerperal fevers.	Scarlet fever	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births
Akron	27,601	57	24.85	.....	.....	28	6	16	1	.....	.....	2	.....	.....	.....	.....	.....	.....	1	8	2	4	15	.....	.....	.....	1	2	1	6	.....	2	5	1	5
Canton	26,189	31	14.20	15	2	12	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	4	1	3	7	1	1	.....	.....	.....	1	.....	.....	2	6	1	1
Chillicothe	1[illegible],288	25	26.57	7	2	11	.....	4	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	5	4	3	1	7	1	1	.....	.....	.....	3	.....	.....	1	.....	2	1
Cincinnati	296,908	549	22.12	153	7	115	9	26	6	4	12	8	.....	.....	.....	1	.....	12	6	101	26	55	256	7	5	12	8	12	23	39	.....	22	39	38	37
Cleveland	261,353	779	35.76	176	81	314	17	†	2	†	8	5	1	12	.....	17	.....	7	19	84	19	38	273	10	6	14	65	15	22	23	1	74	46	23	36
Columbus	88,150	152	20.70	48	15	40	.....	29	.....	.....	1	1	1	.....	.....	.....	.....	2	5	23	2	20	45	1	1	.....	2	7	7	7	.....	12	9	14	4
Dayton	61,220	79	15.48	18	11	22	6	13	1	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	15	3	10	27	.....	.....	1	4	3	2	1	.....	.....	7	5	13
East Liverpool	10,936	8	8.76	6	2	3	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	1	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....
Findlay	18,553	14	9.05	5	3	9	1	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	2	.....
Hamilton	17,565	32	21.86	14	2	8	1	4	.....	.....	2	1	.....	.....	.....	.....	.....	.....	.....	3	.....	2	13	.....	.....	.....	4	1	3	1	.....	.....	6	2	1
Ironton	10,939	13	14.26	2	1	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	3	5	.....	.....	.....	.....	.....	1	1	.....	.....	1	1	1
Lima	15,981	21	15.76	7	13	17	.....	11	1	.....	.....	1	.....	.....	1	1	.....	2	.....	.....	.....	.....	2	.....	1	.....	.....	.....	1	.....	.....	.....	.....	2	.....
Mansfield	13,473	16	14.25	8	.....	6	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	1	7	.....	1	.....	.....	.....	3	.....	.....	.....	1	.....	.....
*Massillon	10,092	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newark	14,270	20	16.81	4	2	5	1	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	1	4	7	1	1	.....	.....	2	.....	2	.....	.....	3	.....	2
Portsmouth	12,394	15	14.52	4	.....	3	.....	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	9	2	7	2	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	5
Sandusky	18,471	10	6.49	3	3	6	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	2	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	2
Springfield	31,895	37	13.91	4	8	5	.....	2	1	.....	.....	.....	1	.....	.....	.....	.....	1	.....	5	.....	5	19	3	.....	.....	1	1	2	4	.....	.....	5	5	2
Steubenville	13,394	20	17.92	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tiffin	10,801	16	17.77	.....	.....	4	1	1	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	4	1	3	3	.....	1	.....	.....	.....	1	.....	.....	1	3	2	.....
Toledo	81,434	147	21.66	52	18	44	.....	26	5	.....	4	.....	.....	1	.....	1	.....	2	1	22	2	13	58	1	3	1	12	2	4	.....	.....	9	10	12	11
Youngstown	33,220	59	21.35	31	10	40	.....	18	.....	.....	6	.....	1	3	.....	.....	.....	1	9	5	2	.....	9	.....	1	1	3	.....	4	.....	.....	.....	3	2	9
Zanesville	21,009	26	14.81	5	2	6	.....	2	.....	.....	.....	1	3	.....	.....	.....	.....	.....	.....	6	1	4	7	.....	1	.....	.....	.....	1	1	.....	.....	3	3	2
Totals	1,097,064	2,126	23.25	552	352	700	42	187	17	4	39	19	7	16	1	21	.....	31	48	310	67	174	765	25	23	29	101	45	81	85	1	125	147	117	132

* Not reported.

† Cholera morbus and cholera infantum, 237.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JULY, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Alliance	7,607	6	9.46	3	1	3	....	2	1	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	1	....	....	....	....	....	....	....	1
Bellaire	9,931	10	12.08	5	....	2	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	1	3	....	....	....	....	....	....	....	....	1	4	....	1
Bucyrus	5,974	5	10.03	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	2	....	....	....	2	....	....
*Circleville	6,556	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Defiance	7,694	9	14.03	....	5	7	....	4	....	1	1	....	....	....	....	....	....	....	....	2	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....
*Delaware	8,224	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fremont	7,141	9	15.12	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	3	4	1	2	....	....	....	....	....	....	1	....	2	....
Fostoria	7,070	11	18.67	....	2	4	....	2	....	....	....	1	....	....	....	1	....	....	....	2	....	2	5	....	....	....	1	....	4	....	....	....	....	....	....
Galion	6,326	10	18.96	4	1	2	....	1	....	....	....	....	....	1	....	....	....	....	....	4	3	1	3	....	....	....	2	....	....	....	....	....	1	....	1	....
Gallipolis	4,498	10	26.67	1	....	4	....	2	1	....	....	1	....	....	....	....	....	....	....	1	....	1	2	....	1	....	....	....	....	1	....	....	....	1	1	....
Greenville	5,473	5	10.96	....	....	2	1	....	....	....	1	....	....	....	....	....	....	....	....	1	....	1	1	....	....	....	....	....	1	....	....	....	....	....	1	1
*Kenton	5,557	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lancaster	7,555	12	14.29	4	....	3	....	1	....	....	....	2	....	....	....	....	....	....	....	....	....	....	7	....	....	1	....	2	1	1	....	....	....	....	1	....
*Marietta	8,273	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Marion	8,327	17	24.49	....	....	8	1	6	....	....	....	....	....	....	....	....	....	1	....	2	....	1	4	....	....	....	....	....	2	1	....	1	2	1	....
Martin's Ferry	6,250	9	17.26	2	1	4	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	....	3	....	....	....	....	2	....	....	....	....	1	1	1	1
Middletown	9,364	5	6.40	1	1	1	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	1	3	1	....	1	....	....	....	1	....	....	....	....	....	....
Mt. Vernon	6,027	7	13.93	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	2	1	1	4	....	....	....	1	....	....	2	....	1	....	....	1
Norwalk	7,195	5	8.34	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	4	....	2	....	....	....	2	....	....	....	....	....	....	....
*Piqua	9,090	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
*Pomeroy	4,226	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Salem	5,780	12	26.40	3	....	7	....	1	....	....	2	....	....	....	....	....	....	2	1	3	....	3	1	....	....	....	....	....	....	....	....	....	....	1	....
Troy	4,494	5	15.57	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	3	2	....	1	....	....	....	1	....	....	....	....	....	....
Urbana	6,510	8	14.73	2	3	3	....	1	....	....	2	....	....	....	....	....	....	....	....	....	....	....	4	....	....	1	1	....	2	....	....	....	1	....	....
Warren	5,973	12	18.08	3	....	2	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6	....	....	....	....	2	2	....	....	....	2	2	....
Wash'gton C. H	5,742	10	20.89	2	....	2	....	1	....	....	....	....	....	....	....	....	....	1	....	6	....	4	1	....	....	....	....	....	....	....	....	....	....	....	....
*Wellston	4,377	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wellsville	5,247	11	25.15	3	1	4	2	2	....	....	....	....	....	....	....	....	....	....	....	3	....	3	4	....	....	....	2	....	2	....	....	....	....	....	1
*Wooster	5,901	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Xenia	7,301	13	21.36	2	2	4	....	....	....	2	1	....	....	....	....	....	....	....	....	....	....	....	5	....	....	....	....	2	2	1	....	....	3	1	2
Totals	143,519	191	15.97	36	19	64	4	26	2	4	8	4	1	....	1	1	....	6	1	35	4	28	71	2	6	3	8	8	21	7	....	6	16	11	8

* Not reported.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF AUGUST, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer	Phthisis pulmonalis	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Akron	27,601	38	16.52	....	22	16	3	6	....	....	....	....	....	....	....	....	....	1	1	4	1	3	11	....	1	....	2	2	1	2	....	2	5	2	4
*Canton	26,189	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chillicothe	11,288	18	19.13	5	2	7	....	1	..	....	....	....	1	....	....	....	....	3	2	3	1	2	6	2	....	....	....	2	1	....	....	....	....	2	2
Cincinnati	296,908	504	20.86	125	73	111	15	28	5	4	17	4	....	....	....	2	....	6	6	82	10	50	250	26	9	12	13	14	24	23	1	19	18	29	40
Cleveland	261,353	570	26.17	213	126	204	10	†	1	†	3	5	2	3	....	30	....	14	14	93	12	42	215	5	6	12	65	8	19	24	....	33	35	23	48
Columbus	88,150	113	15.38	35	10	33	....	15	....	....	1	1	....	....	....	....	....	10	3	15	3	12	29	....	2	1	3	2	7	3	....	5	4	9	7
Dayton	61,220	123	24.10	35	21	46	11	19	3	....	....	1	....	....	....	....	....	5	....	25	7	16	32	2	....	1	2	....	1	3	....	1	5	6	5
East Liverpool	10,956	11	12.04	3	2	6	....	3	....	....	....	2	....	....	....	....	....	1	....	1	1	....	3	....	....	....	2	....	1	....	....	....	....	1	....
Findlay	18,553	23	13.79	7	4	16	4	7	....	....	....	....	....	....	....	....	....	....	....	2	....	....	3	....	....	....	....	....	2	....	....	....	1	1	....
Hamilton	17,565	32	21.86	17	5	15	....	5	2	....	1	2	....	....	....	....	....	....	....	4	....	4	8	1	....	....	2	1	1	....	....	1	4	1	2
Ironton	10,939	9	9.87	2	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	3	1	2	5	....	....	....	....	3	....	....	....	....	....	....	1
Lima	15,981	10	7.51	....	....	4	....	2	....	....	1	....	....	....	....	....	....	1	....	3	1	2	2	....	1	....	....	1	....	....	....	....	....	1	....
Mansfield	13,473	14	12.47	3	....	5	....	....	....	....	....	....	....	....	....	....	....	3	2	4	2	1	3	....	....	....	....	1	....	....	....	1	1	1	2
*Massillon	10,092	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Newark	14,270	21	17.66	5	....	5	....	2	1	....	....	....	....	....	....	....	....	1	....	5	1	4	5	....	1	....	....	1	2	1	....	....	2	4	1
Portsmouth	12,394	14	13.55	....	....	2	....	....	....	....	....	1	....	....	....	....	....	....	....	3	1	2	4	....	1	....	....	....	2	....	....	....	....	3	....
Sandusky	18,471	22	14.33	....	....	10	....	6	....	1	....	....	....	....	....	....	....	2	....	3	....	2	7	....	....	....	2	....	1	....	....	....	....	2	....
Springfield	31,895	49	18.43	14	4	14	....	10	....	....	....	1	....	....	1	1	....	....	1	9	....	8	11	1	....	....	....	1	....	....	....	1	8	3	3
Steubenville	13,394	13	11.64	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tiffin	10,801	19	21.20	....	....	7	2	5	....	....	....	....	....	....	....	....	....	....	....	4	1	3	6	1	....	1	....	1	1	....	....	2	2	....	....
Toledo	81,434	162	23.87	71	10	51	8	36	....	....	....	....	1	....	....	....	....	6	2	20	3	11	61	1	3	....	5	....	6	....	....	8	16	13	14
Youngstown	33,220	68	24.56	37	9	37	....	17	1	....	6	....	....	1	1	....	....	2	9	4	1	3	17	1	....	1	2	2	4	....	....	4	8	2	8
Zanesville	21,009	28	15.99	2	5	8	....	5	....	....	....	....	....	....	....	....	....	1	2	6	1	5	12	1	1	....	....	2	3	2	....	....	2	....	....
Totals	1,070,875	1,861	20.85	574	293	598	53	168	13	5	29	17	3	5	2	33	....	56	42	293	47	172	690	35	25	28	98	41	76	58	1	77	111	103	137

*Not reported.

Cholera morbus and cholera infantum, 118.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF AUGUST, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births
Alliance	7,607	5	7.89	1	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	1	1	....	....	....	....	....	....	....	....	....	1	....	3
Bellaire	9,934	4	4.83	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2	....	....	....	....	....	....	....	....	....	....	1	....	....
Bucyrus	5,974	12	24.10	....	3	3	....	2	....	....	....	1	....	....	....	....	....	....	....	1	....	....	6	....	....	....	....	1	2	1	....	....	1	1	1
*Circleville	6,556	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Defiance	7,694	11	17.15	....	4	6	....	1	....	....	3	....	....	....	1	....	....	....	....	5	1	4	....	....	....	....	....	....	....	....	....	....	....	....	....
*Delaware	8,224	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fremont	7,141	7	11.76	2	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	6	....	1	....	1	1	1	2	....	....	....	....	....
Fostoria	7,070	8	13.57	....	2	6	....	....	....	....	....	4	....	....	....	1	....	....	....	1	....	1	1	....	....	....	1	....	....	....	....	....	....	....	....
Galion	6,326	8	15.18	2	....	3	....	2	....	....	....	....	....	....	....	....	....	1	....	2	1	1	2	....	....	1	....	....	1	....	....	....	1	....	....
Gallipolis	4,498	4	10.68	1	1	2	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	1	....	....
Greenville	5,473	7	15.35	5	....	5	1	3	....	....	....	....	....	....	....	....	....	....	1	1	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....
*Kenton	5,557	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Lancaster	7,555	6	9.53	2	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	1	2	....	....	....	....	....	....	....	....	....	1	....	....
†Marietta	8,273	13	9.43	6	2	7	....	2	1	....	....	1	1	....	1	....	....	....	1	3	3	....	3	....	....	....	....	....	2	....	....	1	....	....	2
Marion	8,327	20	28.82	....	....	12	1	5	....	....	....	....	....	....	....	....	....	5	1	5	....	3	3	....	....	....	....	....	....	....	....	....	....	....	....
Martin's Ferry	6,250	5	9.59	1	....	2	....	....	....	1	....	....	....	....	....	....	....	1	....	1	....	1	1	....	....	....	....	1	....	....	....	....	....	1	3
Middletown	9,364	5	6.40	2	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	1	1	....	2	....	....	....	....	1	1	....	....	....	....	1	....
Mt. Vernon	6,027	4	7.96	1	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	1	2	1	....	....	....	....	1	....	....	....	....	....	1
Norwalk	7,195	10	16.67	7	1	3	....	3	....	....	....	....	....	....	....	....	....	....	....	2	....	2	5	....	1	....	....	....	....	2	....	2	....	....	....
*Piqua	9,090	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pomeroy	4,726	6	15.23	....	4	4	....	1	1	....	....	1	....	....	....	....	....	1	....	1	....	1	1	....	....	....	....	....	1	....	....	....	....	....	....
Salem	5,780	16	33.21	3	....	7	....	1	....	....	....	3	....	....	....	....	....	3	....	2	....	1	3	....	....	....	....	....	3	....	....	....	3	1	....
Troy	4,494	6	16.02	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	2	3	2	....	....	....	....	....	....	....	....	....	....	....
Urbana	6,510	10	18.43	1	1	2	....	1	....	....	....	....	....	....	....	....	....	1	....	3	1	2	3	....	....	....	....	....	2	1	....	....	2	....	....
Warren	5,973	8	16.07	2	....	4	....	2	....	....	....	....	....	....	....	....	....	....	2	1	....	1	2	....	....	....	....	1	....	....	....	....	1	....	....
Wash'gton C. H.	5,742	7	14.64	1	2	3	....	1	....	....	....	2	....	....	....	....	....	....	....	2	....	2	2	....	....	....	....	....	1	1	....	....	....	....	....
*Wellston	4,377	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wellsville	5,247	6	13.72	....	....	3	1	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	1	....	....	....	....	....	1	....	....	....	1	....	....
*Wooster	5,901	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Xenia	7,301	13	21.36	1	3	3	....	....	1	1	1	....	....	....	....	....	....	....	....	1	....	....	8	1	....	....	....	....	4	....	....	1	....	1	....
Totals	154,518	201	15.61	38	23	81	3	27	3	2	4	13	3	....	3	1	....	14	5	40	7	27	58	4	2	1	2	5	20	7	....	5	13	6	10

*Not reported. †Reports for two months.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF SEPTEMBER, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Akron	27,601	38	16.74	6	16	10	6	....	....	....	2	....	....	....	....	....	....	1	1	10	3	7	10	1	1	....	1	....	3	4	....	....	6	2	6
Canton	26,189	33	15.12	9	6	14	5	4	....	....	....	....	2	....	....	....	....	1	2	6	....	6	2	....	....	....	....	....	1	1	....	....	10	1	....
Chillicothe	11,288	15	15.94	2	1	5	....	....	....	....	....	....	....	....	....	....	....	3	....	4	....	4	5	1	....	....	....	1	....	....	....	....	....	1	1
Cincinnati	296,908	383	15.52	79	52	82	21	18	8	1	4	4	....	....	....	2	....	10	1	62	8	39	186	20	8	5	12	11	24	13	....	14	20	27	87
Cleveland	261,353	423	19.42	142	101	144	12	†	2	†	3	2	....	4	....	45	....	4	4	53	11	23	148	5	5	13	31	11	15	23	....	20	33	24	30
Columbus	88,150	83	11.29	21	6	22	....	4	1	....	3	1	....	....	....	....	....	10	2	24	2	15	23	1	....	....	....	2	3	6	....	1	4	5	11
Dayton	61,220	86	16.85	8	9	21	10	4	....	....	1	2	....	....	....	....	....	5	....	20	2	14	27	3	....	1	....	1	1	2	....	1	8	5	7
East Liverpool	10,956	6	6.57	....	....	2	....	1	....	....	....	....	....	....	....	....	....	1	....	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Findlay	18,553	19	12.29	6	1	6	....	1	....	....	....	....	....	....	....	....	....	3	....	1	....	....	10	....	....	....	....	....	4	....	....	....	1	1	....
Hamilton	17,565	27	18.44	11	4	6	....	2	....	....	1	....	....	....	....	....	....	3	....	5	1	3	11	....	1	1	1	....	2	3	....	....	4	1	3
Ironton	10,939	7	7.68	1	1	2	....	....	....	....	....	1	1	....	....	....	....	....	....	1	....	1	1	....	....	....	....	1	....	....	....	....	....	1	....
Lima	15,981	13	9.76	....	....	6	....	....	....	....	....	....	....	....	1	1	....	4	....	2	....	2	3	....	1	....	....	....	1	....	....	1	....	2	....
Mansfield	13,473	16	14.25	....	....	6	....	3	....	....	....	....	....	....	....	....	....	3	....	2	1	1	7	....	....	1	2	....	....	....	....	1	1	....	2
*Massillon	10,092	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Newark	14,270	9	7.56	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	1	2	3	1	....	....	....	....	....	1	....	1	1	2	....
Portsmouth	12,394	9	8.71	2	1	3	1	....	....	....	....	1	....	....	....	....	....	1	....	1	....	1	4	2	1	....	....	....	1	....	....	....	1	....	1
Sandusky	18,471	14	9.09	3	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	3	1	....	7	1	1	....	....	....	....	....	....	....	....	3	1
Springfield	31,895	32	12.04	5	4	9	....	1	....	....	....	....	1	....	1	....	....	3	2	4	1	3	15	1	2	....	1	1	2	2	....	....	3	1	....
Steubenville	13,394	10	8.96	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tiffin	10,801	12	13.33	....	....	6	1	1	....	1	1	....	....	....	....	....	....	2	....	2	1	1	3	....	1	....	....	1	1	....	....	....	1	....	....
Toledo	81,434	132	19.45	49	16	33	2	18	....	....	....	1	....	....	....	1	....	3	2	15	2	11	61	4	2	6	7	4	4	....	....	7	8	7	13
Youngstown	33,220	54	19.50	18	6	21	....	7	....	....	7	1	....	....	1	....	....	2	3	9	2	4	21	1	....	4	2	2	4	....	....	3	1	2	6
Zanesville	21,009	24	13.71	....	4	7	....	2	....	....	....	....	....	....	....	....	....	3	....	10	2	7	5	....	1	....	....	....	....	1	....	....	1	....	....
Totals	1,097,064	1,445	15.86	363	228	406	58	67	11	2	22	13	4	4	3	49	....	62	17	241	38	144	552	41	24	31	57	35	66	56	....	49	103	85	119

* Not reported.

† Cholera morbus and cholera infantum, 68.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF AUGUST, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera Infantum.	Cerebro-spinal meningitis	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Alliance	7,607	5	7.89	1	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	1	1	....	....	....	....	....	....	....	....	....	1	....	3
Bellaire	9,934	4	4.83	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2	....	....	....	....	....	....	....	....	....	....	1	....	....
Bucyrus	5,974	12	24.10	....	3	3	....	2	....	....	....	1	....	....	....	....	....	....	....	1	....	....	6	....	....	....	....	1	2	1	....	....	1	1	1
*Circleville	6,556	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Defiance	7,694	11	17.15	....	4	6	....	1	....	....	3	....	....	....	1	....	....	....	....	....	5	1	4	....	....	....	....	....	....	....	....	....	....	....	....
*Delaware	8,224	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fremont	7,141	7	11.76	2	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fostoria	7,070	8	13.57	....	2	6	....	....	....	....	....	4	....	....	....	1	....	....	....	1	....	1	1	....	....	....	1	1	1	2	....	....	....	....	....
Galion	6,326	8	15.18	2	....	3	....	2	....	....	....	....	....	....	....	....	....	1	....	2	1	1	2	....	....	1	....	....	1	....	....	....	....	1	....
Gallipolis	4,498	4	10.68	1	1	2	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....
Greenville	5,473	7	15.35	5	....	5	1	3	....	....	....	....	....	....	....	....	....	....	1	1	....	1	....	....	....	....	....	....	....	....	....	1	1	....	....
*Kenton	5,557	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....
Lancaster	7,555	6	9.53	2	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	1	2	....	....	....	....	....	....	....	....	....	....	....	....
†Marietta	8,273	13	9.43	6	2	7	....	2	1	....	....	1	1	....	1	....	....	....	1	3	3	....	3	....	....	....	....	....	....	....	....	....	1	....	....
Marion	8,327	20	28.82	....	....	12	1	5	....	....	....	....	....	....	....	....	....	5	1	5	....	3	3	....	....	....	....	....	2	....	....	1	....	....	2
Martin's Ferry	6,250	5	9.59	1	....	2	....	....	....	1	....	....	....	....	....	....	....	1	....	1	....	1	1	....	....	....	....	1	....	....	....	....	....	1	3
Middletown	9,364	5	6.40	2	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	1	1	....	2	....	....	....	....	1	1	....	....	....	....	1	....
Mt. Vernon	6,627	4	7.96	1	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	1	2	1	....	....	....	....	1	....	....	....	....	....	1
Norwalk	7,195	10	16.67	7	1	3	....	3	....	....	....	....	....	....	....	....	....	....	....	2	....	2	5	....	1	....	....	....	....	2	....	2	....	....	....
*Piqua	9,090	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pomeroy	4,726	6	15.23	....	4	4	....	1	1	....	....	1	....	....	....	....	....	1	....	1	....	1	1	....	....	....	....	....	1	....	....	....	....	....	....
Salem	5,780	16	33.21	3	....	7	....	1	....	....	....	3	....	....	....	....	....	3	....	2	....	1	3	....	....	....	....	....	3	....	....	....	3	1	....
Troy	4,494	6	16.02	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	2	3	2	....	....	....	....	....	....	....	....	....	....	....
Urbana	6,510	10	18.43	1	1	2	....	1	....	....	....	....	....	....	....	....	....	1	....	3	1	2	3	....	....	....	....	....	2	1	....	....	2	....	....
Warren	5,973	8	16.07	2	....	4	....	2	....	....	....	....	....	....	....	....	....	....	2	1	....	1	2	....	....	....	....	1	....	....	....	....	1	....	....
Wash'gton C. H.	5,742	7	14.64	1	2	3	....	1	....	....	....	2	....	....	....	....	....	....	....	2	....	2	2	....	....	....	....	....	1	1	....	....	....	....	....
*Wellston	4,377	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wellsville	5,247	6	13.72	....	....	3	1	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	1	....	....	....	....	....	1	....	....	....	1	....	....
*Wooster	5,901	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Xenia	7,301	13	21.36	1	3	3	....	....	1	1	1	....	....	....	....	....	....	....	....	1	....	....	8	1	....	....	....	....	4	....	....	1	....	1	....
Totals	154,518	201	15.61	38	23	81	3	27	3	2	4	13	3	....	3	1	....	14	5	40	7	27	58	4	2	1	2	5	20	7	....	5	13	6	10

*Not reported. †Reports for two months.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF OCTOBER, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Akron	27,601	43	18.55	.....	.....	11	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	9	5	4	11	.....	4	1	2	.....	2	.....	.....	.....	6	3	3
*Canton	26,189	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chillicothe	11,288	17	18.07	2	2	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	7	1	6	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	1
Cincinnati	296,908	440	17.77	56	60	89	25	4	2	1	8	3	.....	.....	.....	.....	.....	21	1	79	15	52	220	10	8	10	6	19	20	18	.....	28	28	24	36
Cleveland	261,353	437	20.06	90	95	133	18	†	4	†	3	1	2	5	.....	56	.....	12	2	64	9	26	170	9	6	12	27	11	22	6	3	42	29	27	46
Columbus	88,150	99	13.47	21	8	16	3	4	.....	.....	.....	1	.....	.....	.....	1	.....	7	.....	27	3	15	37	2	1	1	2	3	4	6	.....	4	8	5	8
Dayton	61,220	96	18.00	14	17	31	15	5	.....	1	.....	.....	1	.....	.....	.....	.....	8	.....	16	3	11	36	.....	.....	2	1	1	.....	3	.....	3	5	7	8
East Liverpool	10,956	9	9.86	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	3	.....	1	.....	1	.....	.....	.....	.....	1	5	.....	1
Findlay	18,553	12	7.76	1	1	8	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Hamilton	17,565	29	19.81	6	3	3	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	1	4	19	.....	2	.....	2	.....	4	1	.....	1	2	.....	3
Ironton	10,939	19	20.84	3	3	5	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	3	.....	3	9	1	1	1	.....	1	2	.....	.....	.....	1	.....	3
Lima	15,981	3	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Mansfield	13,473	25	22.26	4	4	13	4	2	.....	.....	1	.....	.....	.....	.....	.....	.....	5	.....	2	2	.....	7	.....	.....	.....	.....	2	.....	.....	.....	.....	2	1	5
*Massillon	10,092	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newark	14,270	12	10.09	1	.....	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	1	1	.....	3	.....	.....	.....	.....	.....	2	1	.....	.....	2	2	.....
Portsmouth	12,594	11	10.69	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2	.....	2	4	.....	.....	.....	.....	.....	3	.....	1	.....	.....	.....	5
Sandusky	18,471	11	7.15	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	5	1	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....
Springfield	31,895	44	16.55	6	5	5	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	2	.....	10	3	6	21	3	2	.....	1	.....	4	6	.....	.....	7	1	2
Steubenville	13,394	13	11.64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tiffin	10,801	21	23.33	.....	.....	11	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	1	.....	1	6	1	1	.....	.....	1	.....	1	1	1	2	1	.....
Toledo	81,434	127	18.71	13	2	28	2	9	4	.....	3	5	.....	.....	.....	.....	.....	2	1	19	4	8	37	1	.....	6	10	9	6	.....	.....	2	8	8	12
Youngstown	33,220	59	14.72	13	9	9	.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....	1	1	5	2	2	18	.....	1	6	1	2	1	.....	.....	6	7	.....	2
Zanesville	21,009	36	20.56	7	1	8	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	7	.....	5	16	4	.....	1	.....	1	4	1	.....	1	4	1	2
Totals	1,070,875	1,543	17.29	239	212	386	89	26	10	2	17	15	3	5	.....	58	.....	82	7	258	49	146	629	32	27	40	53	50	75	43	5	90	120	82	127

* Not reported.

† Cholera morbus and cholera infantum, 20.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF OCTOBER, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal disease.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Alliance	7,607	5	7.89																				3					1							
Bellaire	9,934	9	10.87	1	4	4	2				1												2						1			1	3		1
Bucyrus	5,974	10	20.08	1		2												2		1	1		7	3					4						1
Circleville	6,556	19	34.77	3	1	9	1					1			2			5		4		4	6				2		2	2					2
Defiance	7,694	7	10.92	1	2	5							2			2		1					2						1			1			
*Delaware	8,224																																		
Fremont	7,141	8	13.44																	1		1	4			1			2		1		3		
Fostoria	7,070	7	11.88	4		4		4															3						3						2
Galion	6,826	8	15.17	3	1	6	1											1	1	1	1		1				1								
Gallipolis	4,498	4	10.68			1	1																2			1			1				1		
Greenville	5,473	6	13.16	1		1		1												2	1	1	3						2			1			
*Kenton	5,557																																		
Lancaster	7,555	11	17.34		1	4	1						1					2		1			5	3	1									1	
Marietta	8,273	9	13.05		2															2	1	1	5	1	1		1			1	1		1	1	1
Marion	8,327	18	25.94			4		4												5	1	3	2						1				1	1	
Martin's Ferry	6,250	12	23.04	2	3	8	2		2	1		1				1	1			2		1	1						1					1	
Middletown	9,364	4	5.12			1							1							2	1	1	1		1										
Mt. Vernon	6,027	11	21.90	1	2	3					1							1		1		1	2					1	1				3	2	
Norwalk	7,195	7	11.67			3												2		3	1	2	1		1										
Piqua	9,090	14	18.48	2		1													1				8	4								1	4	1	
Pomeroy	4,726	2	5.08	1		1	1																1									1			
Sa'em	5,780	11	22.84	2	2	3		1										2		2	2		2						2				4		1
*Troy	4,494																																		
Urbana	6,510	8	14.74	2		1			1											2	1	1	3						2	1			2		1
Warren	5,973	6	12.06			1							1										2										2	1	
Wash'gton C. H.	5,742	15	31.35	1	4															5		4	5						2					5	
Wellston	4,377	10	27.41	1	1	3			1		1		1							1		1	4	1		1				1		1	2		
Wellsville	5,247	2	4.57																	1		1	1				1								
*Wooster	5,901																																		
*Xenia	7,201																																		
Totals	162,746	223	16.44	26	23	65	9	10	4	1	3	2	6		2	3	1	16	2	36	10	22	76	12	4	3	5	2	25	5	2	6	26	13	9

* Not reported.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF NOVEMBER, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases	Total violence.	Premature and still-births.
Akron	27,601	41	17.82	...	...	11	7	...	...	...	...	...	...	...	...	...	...	2	1	5	1	4	16	...	...	2	...	...	3	...	...	6	7	...	4
Canton	26,189	32	14.66	4	3	8	7	...	...	...	...	...	...	...	...	...	...	1	...	3	1	...	15	...	...	...	1	...	7	4	...	3	4	2	...
Chillicothe	11,288	9	9.57	1	2	6	...	...	...	2	...	...	...	...	...	...	...	3	...	1	1	...	2	...	...	...	...	...	...	...	...	1	...	...	1
Cincinnati	296,908	443	17.90	81	60	78	28	3	2	...	3	6	...	...	...	1	...	11	1	95	15	60	222	10	5	21	16	18	33	9	5	40	28	20	49
Cleveland	261,353	450	20.66	77	117	140	22	†	1	†	...	1	...	1	...	89	...	12	...	61	18	40	192	10	14	15	34	11	26	13	1	37	38	12	40
Columbus	88,150	122	16.60	17	14	24	12	1	...	...	3	...	1	...	...	2	...	3	...	24	9	9	56	3	2	...	4	5	7	1	...	13	6	8	4
Dayton	61,220	108	21.17	16	20	22	14	1	...	...	...	1	1	...	...	3	...	1	9	16	3	9	32	2	...	...	6	...	...	2	...	5	9	8	8
East Liverpool	10,956	10	10.95	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	4	...	2	4	...	...	...	...	1	1	...	...	2	...	1	...
Findlay	18,553	19	12.29	3	5	7	4	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	12	...	...	...	...	...	6	...	...	2	...	...	...
Hamilton	17,565	26	17.76	3	6	5	2	1	...	...	...	...	...	...	...	...	...	...	...	3	...	...	13	...	...	...	...	...	1	...	...	4	2	3	...
Ironton	10,939	17	18.65	2	4	7	1	...	...	...	1	...	...	...	...	3	...	2	...	...	...	...	9	2	...	...	...	1	2	...	...	2	1	...	...
Lima	15,981	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	1	...	...	1	...	1	...	...	...
Mansfield	13,473	15	13.35	3	1	3	1	...	...	...	...	...	...	...	...	...	...	...	1	3	...	3	9	1	...	...	...	...	...	...	...	5	...	...	1
*Massillon	10,092	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Newark	14,270	15	12.61	4	2	5	2	1	...	...	...	...	...	...	...	...	...	...	...	3	...	2	3	1	...	...	...	...	...	...	...	2	2	2	3
Portsmouth	12,394	14	13.55	3	5	3	...	...	...	...	...	1	...	...	...	...	...	1	1	5	...	3	4	...	...	...	1	...	2	1	...	...	...	2	2
Sandusky	18,471	17	11.04	2	5	7	6	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	5	1	...	1	...	...	1	...	...	...	1	2	1
Springfield	31,895	40	15.05	5	1	7	2	...	1	...	...	...	...	...	...	...	...	...	...	4	1	3	21	1	4	...	2	2	2	...	...	4	6	2	3
*Steubenville	13,394	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tiffin	10,801	20	22.22	...	...	6	5	...	...	...	1	...	...	...	...	...	...	...	...	4	...	4	3	...	...	...	...	...	...	...	...	3	7	...	1
Toledo	81,434	104	15.32	25	8	16	4	1	2	...	...	1	...	...	...	...	...	3	...	14	1	11	48	6	4	12	4	4	4	...	...	4	11	10	19
Youngstown	33,220	43	15.55	15	7	...	...	...	...	...	2	...	...	...	...	1	...	2	5	4	2	2	23	...	2	1	3	2	3	3	...	6	3	2	9
Zanesville	21,009	22	12.56	3	1	2	1	...	...	...	...	...	...	...	...	...	...	...	...	6	3	1	12	2	...	...	1	...	3	1	...	...	2	...	...
Totals	1,083,670	1,570	17.38	264	261	358	118	8	7	2	10	10	2	1	...	99	...	44	18	257	50	154	704	39	31	52	73	44	101	35	6	140	27	74	145

* Not reported.

† Cholera morbus and cholera infantum, 10.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF NOVEMBER, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Alliance	7,607	8	13.41			3												3		1			3						1				1		
Bellaire	9,934	11	13.29	2	2	2	2																3	1	1			1					3	3	
Bucyrus	5,974	9	18.08	2		1												1		1		1	6						3			3		1	2
Circleville	6,556	16	29.13	1		5			2								2	1		3		3	6	1			1		2			2		2	
*Defiance	7,694																																		
*Delaware	8,224																																		
Fremont	7,141	5	8.40																	1		1	3			1			2				1		
Fostoria	7,070	6	10.18		1	1	1																4						3			1		1	
Galion	6,326	5	9.49		1															1	1		2						2					2	
Gallipolis	4,498	9	24.01		3	3	3													1		1	4						3			1		1	
Greenville	5,473	6	13.16	1	1															2		1	4			2			2						1
*Kenton	5,567																																		
Lancaster	7,555	9	14.29	4																2	1	1	2			1							4	1	
Marietta	8,273	6	8.70	1	1	1												1					4	1	1		1					1		1	1
Marion	8,327	9	12.97			5	3											2		2		1	2						1						
Martin's Ferry	6,250	14	26.88	2	3	5	3									1		1		2		2	4			1			1			2	1	2	1
Middletown	9,364	16	20.51	2		5					2				1			1		4		4	6	1		2			1	2				1	
Mt. Vernon	6,027	7	13.93	1	1															2		1	3	2								1	1	1	
Norwalk	7,195	7	11.67	2		1												1		1		1	5						3			2			
Piqua	9,090	11	14.52		1	4					2				1			1		4	1	3	3	1					1			1			
Pomeroy	4,726	2	5.08	1	1	1	1																											1	
Salem	5,780	6	12.46	1	1	1												1		1	1		4				1		1				1		1
*Troy	4,494																																		
Urbana	6,510	6	11.06	1		1					1												3						2	1			2		
Warren	5,973	6	12.06			3			1									2		3		3													
Wash'gton C. H.	5,742	7	14.61	2																2		1	2			1			1				1	2	
Wellston	4,377	5	13.70	1		2	2													1		1	1		1									1	1
Wellsville	5,247	3	6.88																				3		1			1	1						1
*Wooster	5,901																																		
Xenia	7,301	9	14.79	1	1	1												1		2		2	5	1		1		1	1	1			1		
Totals	162,353	198	14.72	25	17	45	15		3		2	3			2	1	2	16		26	4	27	52	8	4	9	3	3	31	4		14	16	20	8

*Not reported.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF DECEMBER, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Akron	27,601	36	15.65	....	....	9	2	....	....	....	....	....	....	....	....	....	....	3	....	3	....	3	20	2	....	2	....	....	1	....	....	10	4	....	2
Canton	26,189	29	14.65	8	6	11	10	....	1	....	....	....	....	....	....	....	....	....	....	4	1	3	4	1	1	....	....	....	2	....	....	....	8	2	....
Chillicothe	11,288	17	18.06	3	1	4	1	....	....	....	1	....	....	....	....	....	....	2	....	....	....	....	9	2	....	....	....	....	2	1	....	2	1	3	1
Cincinnati	296,908	563	22.75	96	57	104	21	....	1	....	8	4	....	1	....	1	....	37	2	98	12	63	306	21	9	34	12	27	38	19	....	51	35	20	60
Cleveland	261,353	423	19.42	92	74	94	10	†	....	†	....	....	2	....	....	56	....	7	....	50	7	25	212	5	14	13	43	11	26	13	2	50	49	17	30
Columbus	88,150	98	13.34	17	13	20	13	....	....	....	....	....	....	....	....	1	....	4	....	19	2	12	44	1	1	1	1	4	2	4	1	13	9	2	5
Dayton	61,220	65	12.74	11	9	13	9	....	1	....	....	....	1	....	....	....	....	....	....	12	....	11	36	2	....	1	3	2	3	1	....	6	4	....	14
East Liverpool	10,956	14	15.33	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	10	....	....	2	....	....	1	....	....	1	....	....	....	....	1	2
Findlay	18,553	16	10.35	3	1	4	....	....	....	1	....	....	....	....	....	....	1	2	....	4	....	3	5	....	1	....	....	....	2	....	....	2	2	1	....
Hamilton	17,565	19	12.98	5	4	2	1	....	....	....	....	....	....	....	....	....	....	1	....	1	....	1	8	1	....	....	2	....	....	....	....	1	4	3	1
Ironton	10,939	20	21.92	2	4	2	....	....	....	....	....	....	....	....	....	2	....	....	....	4	1	2	9	....	....	2	2	....	2	....	....	1	2	2	....
Lima	15,981	3	.....	....	....	2	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....
Mansfield	13,473	11	9.80	1	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	3	1	1	7	1	1	....	....	....	1	....	....	2	....	....	....
*Massillon	10,092	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Newark	14,270	17	14.29	2	2	5	2	....	....	....	....	....	....	....	....	....	....	2	1	3	....	2	6	1	....	1	....	1	1	....	....	2	1	2	2
Portsmouth	12,394	17	16.46	3	3	1	....	....	....	....	....	....	....	....	....	....	....	....	1	4	1	3	10	2	1	2	....	....	2	....	....	3	....	2	7
Sandusky	18,471	12	7.79	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	3	1	1	6	2	....	....	....	....	....	....	....	2	1	1	....
Springfield	31,895	40	15.05	2	4	4	2	....	....	....	....	....	....	....	....	....	....	2	....	11	3	7	19	4	1	1	1	1	6	1	....	2	4	2	2
Steubenville	13,394	7	6.27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tiffin	10,801	15	16.66	....	....	2	1	....	1	....	....	....	....	....	....	....	....	....	....	3	1	1	3	....	1	....	....	....	2	....	....	....	7	....	....
Toledo	81,434	105	15.47	16	13	15	3	1	1	....	....	....	....	....	....	....	....	3	1	18	3	13	52	5	....	4	6	6	5	....	....	7	15	5	17
Youngstown	33,220	34	12.29	....	....	11	2	....	....	....	....	....	....	....	....	2	....	2	1	3	1	2	18	2	....	2	1	5	3	....	....	3	1	1	5
Zanesville	21,009	21	11.99	9	....	1	....	....	....	....	1	....	....	....	....	....	....	....	....	6	3	3	12	1	....	2	....	....	1	....	....	4	1	....	1
Totals	1,097,064	1,582	17.30	270	191	307	81	1	5	1	10	4	4	1	....	62	1	65	6	259	37	156	789	53	30	66	71	57	100	40	3	161	148	64	149

* Not reported.

† Cholera morbus and cholera infantum, 8.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF DECEMBER, 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Alliance	7,607	7	11.05	1	1	3	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	2	....	....	....	....	1	....	....	....	....	2	....	....
Bellaire	9,934	4	4.83	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	3	1	2	....	....	....	....	....	....	....	....	....	....	....	....	2
Bucyrus	5,974	8	16.07	1	....	2	....	....	....	....	....	....	....	....	....	....	....	2	....	1	....	1	4	....	....	1	....	....	2	....	....	1	....	1	....
Circleville	6,556	16	29.28	....	....	2	....	....	....	....	....	....	....	....	....	....	....	2	....	4	....	4	10	1	1	....	1	1	2	....	....	4	....	....	....
Defiance	7,694	10	15.69	....	3	3	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	6	....	1	2	....	1	1	....	....	1	....	1	....
*Delaware	8,224	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fremont	7,141	6	15.12	2	1	1	1	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	5	....	....	2	1	....	....	1	....	1	2	....	....
Fostoria	7,070	9	10.18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2	4	....	....	....	....	....	3	1	....	....	....	....	2
Galion	6,326	10	18.97	2	....	1	....	....	....	1	....	....	....	....	....	....	....	....	....	2	....	2	6	1	....	....	....	1	1	....	....	3	....	1	....
Gallipolis	4,498	1	2.66	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Greenville	5,473	7	15.36	....	1	3	2	....	....	....	1	....	....	....	....	....	....	....	....	1	....	1	3	....	....	....	....	....	1	....	....	....	....	....	....
*Kenton	5,557	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Lancaster	7,555	5	7.94	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	4	2	....	1	....	....	....	....	....	....	....	....	....
*Marietta	8,273	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Marion	8,327	10	14.41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	1	3	6	1	....	....	....	....	1	....	....	1	....	....	....
Martin's Ferry	6,350	7	13.44	....	2	1	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	1	4	....	....	....	....	....	1	1	....	1	....	1	....
Middletown	9,364	9	11.53	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	5	2	3	2	1	....	....	....	....	1	....	....	....	....	1	....
Mt. Vernon	6,027	8	11.94	....	2	1	....	....	1	....	....	....	....	....	....	....	....	....	....	2	1	1	5	....	1	....	....	....	3	....	....	1	....	....	....
Norwalk	7,195	9	15.01	....	....	2	....	....	....	....	....	....	....	1	....	1	....	....	....	1	....	1	6	....	1	....	....	....	3	....	....	2	....	....	....
*Piqua	9,090	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
*Pomeroy	4,726	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Salem	5,780	7	14.53	....	....	2	....	....	....	....	....	....	....	....	1	....	....	1	....	1	1	....	4	1	....	....	....	....	3	....	....	....	....	....	1
*Troy	4,494	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Urbana	6,510	2	3.69	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Warren	5,973	†	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wash'gton C. H.	5,742	4	8.36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2	1	....	....	....	....	....	1	....	....	....	....	....	....
Wellston	4,377	4	10.99	1	....	2	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	2	....	....	....	1	....	1	....	....	....	....	....	....
Wellsville	5,247	6	18.72	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	4	....	....	....	....	1	....	....	....	2	....	....	....
*Wooster	5,901	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Xenia	7,801	7	11.30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5	....	3	1	....	....	....	....	....	....	....	....	....	....	1	....
Totals	148,558	156	12.64	8	16	27	4	....	2	1	2	....	....	1	1	3	1	9	....	38	7	28	79	7	4	6	3	5	24	3	....	17	4	7	6

*Not reported. † No deaths during December.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF DECEMBER, 1894.

Cities of 10,000 inhabitants (census 1890) or over.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Akron	27,601	36	15.65	....	.....	9	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	3	.....	3	20	2	.....	2	.....	.....	1	.....	.....	10	4	.....	2
Canton	26,189	29	14.65	8	6	11	10	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1	3	4	1	1	.....	.....	.....	2	.....	.....	.....	8	2	.....
Chillicothe	11,288	17	18.06	3	1	4	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	9	2	.....	.....	.....	.....	2	1	.....	2	1	3	1
Cincinnati	296,908	563	22.75	96	57	104	21	.....	1	.....	8	4	.....	1	.....	1	.....	37	2	98	12	63	306	21	9	34	12	27	38	19	.....	51	35	20	60
Cleveland	261,353	423	19.42	92	74	94	10	†	.....	†	.....	.....	2	.....	.....	56	.....	7	.....	50	7	25	212	5	14	13	43	11	26	18	2	50	49	17	30
Columbus	88,150	98	13.34	17	13	20	13	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	4	.....	19	2	12	44	1	1	1	1	4	2	4	1	13	9	2	5
Dayton	61,220	65	12.74	11	9	13	9	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	12	.....	11	36	2	.....	1	3	2	3	1	.....	6	4	.....	14
East Liverpool	10,956	14	15.33	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	.....	.....	2	.....	.....	1	.....	.....	1	.....	.....	.....	.....	1	2
Findlay	18,553	16	10.85	3	1	4	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	2	.....	4	.....	3	5	.....	1	.....	.....	.....	2	.....	.....	2	2	1	.....
Hamilton	17,565	19	12.98	5	4	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	1	8	1	.....	.....	2	.....	.....	.....	.....	1	4	3	1
Ironton	10,939	20	21.92	2	4	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	4	1	2	9	.....	.....	2	2	.....	2	.....	.....	1	2	2	.....
Lima	15,981	3	.....	.....	.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Mansfield	13,473	11	9.80	1	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	1	7	1	1	.....	.....	.....	1	.....	.....	2	.....	.....	.....
*Massillon	10,092	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newark	14,270	17	14.29	2	2	5	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	3	.....	2	6	1	.....	1	.....	1	1	.....	.....	2	1	2	2
Portsmouth	12,394	17	16.46	3	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	4	1	3	10	2	1	2	.....	.....	2	.....	.....	3	.....	2	7
Sandusky	18,471	12	7.79	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	3	1	1	6	2	.....	.....	.....	.....	.....	.....	.....	2	1	1	.....
Springfield	31,895	40	15.05	2	4	4	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	11	3	7	19	4	1	1	1	1	6	1	.....	2	4	2	2
Steubenville	13,394	7	6.27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tiffin	10,801	15	16.66	.....	.....	2	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	1	3	.....	1	.....	.....	.....	2	.....	.....	.....	7	.....	.....
Toledo	81,434	105	15.47	16	13	15	3	1	1	.....	.....	.....	.....	.....	.....	.....	.....	3	1	18	3	13	52	5	.....	4	6	6	5	.....	.....	7	15	5	17
Youngstown	33,220	34	12.29	.....	.....	11	2	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2	1	3	1	2	18	2	.....	2	1	5	3	.....	.....	3	1	1	5
Zanesville	21,009	21	11.99	9	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	6	3	3	12	1	.....	2	.....	.....	1	.....	.....	4	1	.....	1
Totals	1,097,064	1,582	17.30	270	191	307	81	1	5	1	10	4	4	1	.....	62	1	65	6	259	37	156	789	53	30	66	71	57	100	40	3	161	148	64	149

* Not reported.

† Cholera morbus and cholera infantum, 8.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING THE YEAR 1894.

Cities of less than 10,000 inhabitants.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhoeal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases	Total violence.	Premature and still-births.
Alliance	7,637	93	11.83	13	7	23	2	6	2	...	...	...	...	...	...	...	...	6	...	9	1	6	22	1	...	...	...	2	1	...	...	6	5	3	1
Bellaire	9,934	131	13.19	24	22	28	5	...	1	4	2	...	...	...	...	5	...	4	4	18	3	14	46	1	2	2	5	7	3	3	...	17	18	11	10
Bucyrus	5,974	107	17.91	10	4	19	3	1	...	...	...	2	2	...	...	...	...	7	...	17	4	11	57	7	...	3	...	4	23	6	...	9	5	4	5
*Circleville	6,556	41	25.01	4	1	16	1	...	2	...	...	1	...	...	2	...	2	8	...	11	...	11	22	2	1	...	4	1	6	2	...	6	...	2	2
*Defiance	7,694	73	12.74	1	14	31	1	5	...	4	4	...	2	...	2	8	...	2	...	13	4	9	21	...	2	4	...	2	7	...	...	6	...	8	8
*Delaware	8,224	47	13.74	1	10	15	...	...	...	...	...	...	...	12	1	...	...	2	...	12	3	9	19	4	1	1	...	2	5	...	...	6	...	1	2
Fremont	7,141	96	13.44	13	10	11	2	1	...	...	2	1	...	...	1	...	...	2	1	18	5	13	51	6	9	4	4	3	10	7	1	7	7	4	2
Fostoria	7,070	88	12.45	9	15	29	5	8	2	...	...	8	...	...	...	2	...	1	...	10	1	9	48	...	1	1	2	...	36	7	...	1	...	1	17
*Galion	6,325	75	13.28	13	5	21	3	5	...	1	...	...	...	1	1	...	1	2	2	17	8	9	21	3	...	1	4	1	7	...	...	5	8	8	...
Gallipolis	4,498	67	14.89	2	4	13	5	4	1	...	...	2	...	...	...	...	...	...	1	11	...	10	32	...	4	2	1	1	8	2	...	12	7	3	...
Greenville	5,473	68	12.42	14	4	18	4	5	...	...	2	...	2	...	...	1	...	1	3	15	3	11	32	4	1	4	...	3	13	...	...	5	...	2	3
*Kenton	5,557	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lancaster	7,855	94	12.44	16	2	11	1	2	...	...	1	2	2	...	...	...	...	3	...	16	3	12	49	11	3	3	...	5	7	1	...	2	12	4	2
*Marietta	8,273	48	11.60	8	6	8	...	2	1	...	...	1	1	...	1	...	...	1	1	5	4	1	23	8	2	...	2	...	...	6	1	2	1	5	5
Marion	8,327	149	17.89	1	...	63	7	10	3	...	...	...	...	2	...	9	...	5	3	32	4	28	86	2	...	...	1	2	10	3	...	5	7	5	1
Martin's Ferry	6,250	107	17.12	32	11	40	8	2	4	2	2	1	...	...	...	2	1	5	1	17	1	14	28	1	1	2	...	4	5	3	...	11	5	10	13
Middletown	9,364	92	9.82	15	8	21	1	3	...	...	6	1	3	...	1	...	...	2	1	28	7	20	38	7	2	6	...	3	5	7	1	7	...	5	...
Mt. Vernon	6,027	99	16.42	6	7	15	...	2	2	...	1	...	1	1	...	...	...	4	4	26	3	22	40	4	2	1	4	1	7	9	1	10	25	6	1
Norwalk	7,195	89	12.39	11	2	14	...	4	1	...	...	...	1	1	...	2	...	3	...	22	4	18	48	...	12	1	2	...	17	3	2	11	1	8	...
*Piqua	9,090	134	19.80	20	3	19	...	...	1	...	...	4	1	1	1	...	...	6	5	29	4	25	51	8	3	2	2	1	10	7	...	10	31	4	4
*Pomeroy	4,726	38	9.74	2	9	14	2	3	2	...	...	1	...	...	2	...	...	3	...	10	2	8	10	1	...	...	...	...	4	...	...	4	...	3	4
Salem	5,780	115	19.88	24	9	38	...	3	3	...	2	3	...	2	1	1	...	6	4	15	6	6	41	3	2	...	3	2	18	1	1	6	14	6	6
*Troy	4,494	62	16.46	7	8	5	1	...	...	...	...	...	...	...	...	...	...	3	...	24	6	16	25	7	3	...	...	1	8	1	...	1	2	4	3
Urbana	6,510	71	10.90	8	7	11	1	3	1	...	2	1	...	...	...	...	...	1	...	16	3	10	35	8	1	1	1	...	18	5	1	3	9	...	6
Warren	5,973	66	11.05	9	...	18	...	5	3	...	...	...	3	...	...	...	...	2	2	10	2	7	23	3	...	1	...	3	2	...	...	2	7	8	2
Wash'gton C. H.	5,742	93	16.19	16	20	21	1	3	2	1	...	2	1	...	1	1	1	2	1	25	...	21	16	1	1	1	1	2	7	...	...	6	5	8	6
Wellston	4,377	77	17.59	18	12	25	4	4	6	2	1	...	1	...	1	...	1	...	3	9	...	7	26	3	1	4	4	5	2	1	...	1	14	3	9
Wellsville	5,247	87	16.58	13	1	25	5	6	...	1	...	...	2	1	5	8	...	3	1	11	3	8	24	...	1	...	4	3	7	...	...	5	1	3	1
*Wooster	5,901	8	16.26	...	...	3	1	...	...	...	...	...	1	...	...	...	...	...	...	1	1	...	4	...	1	...	...	...	...	...	...	...	...	...	...
*Xenia	7,301	69	18.90	11	9	16	...	2	3	2	1	1	...	...	...	...	...	2	2	14	1	8	28	2	1	2	...	4	10	4	...	2	7	4	2
Totals	194,223	2,281	15.22	271	193	591	63	99	40	7	26	19	23	24	28	39	6	115	9	461	86	328	905	92	57	46	44	62	256	78	8	168	191	133	110

* Circleville 3 months, Defiance 9, Delaware 5, Galion 11, Kenton not reported, Marietta 6, Piqua 9, Pomeroy 10, Troy 10, Wooster 1, Xenia 9.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF JANUARY, 1894.

Sixty-eight villages	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera Infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Ada	2,079	1	5.77																				1	1											
Amelia	600	2	40.00																				1									1		1	
Antwerp	1,331	4	36.06		2	2	2																2		1							1			
Ashtabula	8,338	12	17.27	4	2	1	1													2	1	1	4		1	1	1		1				4	1	
Athens	2,640	3	13.63																	2		2	1									1			
Avondale	4,473	5	13.41			1												1		2	1	1	2						1			1			
Bellevue	3,052	4	15.73	1																			3		2							1			
Blanchester	1,196	1	10.03																				1							1					
Bloomville	758	1	15.57																				1					1							
Bourneville	320	1	37.50																				1		1										
Bryan	3,068	4	15.64																	1		1	2						1			1		1	
Caldwell	1,248	2	19.23																				2						1						
Carthage	2,257	1	5.32			1		1																											
Chester Hill	676	4	71.00			2										2				2		2													
Chicago	1,299	3	27.71		1	2																	1									1			
Clifton, Ham. Co	1,575	1	7.62		1																		1									1			
Clyde	1,227	1	9.77																				1	1											1
Conneaut	3,241	1	3.70																														1		
Cumberland	601	1	19.97																				1	1											
Cuyahoga Falls	2,614	4	18.32	3		3						1					1			1		1													
Delta	1,132	3	31.80			3	3																												
Doylestown	1,131	3	31.83			1										1							2						1			1			
Elmore	1,198	2	20.03			1	1													1		1													
Elmwood Place	1,980	4	24.24		2	1	1																3						1			2			
Elyria	5,611	13	27.78	2		1												1		3	1	2	8	1		1		2	2	1		1	1		
Fairport Harb'r	1,171	3	30.74	2	1																		2							1		1		1	1

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, ETC.—Continued.

Sixty-eight villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Forest	1,126	2	21.31																	1		1											1		1
Garrettsville	1,046	2	22.94																				1							1				1	
Grand Rapids	572	1	20.98			1										1																			1
Kent	3,501	2	6.85																														2		
Leetonia	2,826	2	8.49		1	1	1																											1	
Lexington	432	1	27.77																														1		
Linwood	1,291	1	9.29																														1		
Lockland	2,474	2	9.70																	1		1	1												
Logan	3,119	2	7.69																	1		1	1						1						
Lorain	4,863	2	4.93		1																		2	1								1			
Loramies	457	1	26.26																				1									1			
Manchester	1,965	2	12.11																	1			1												
McArthur	848	1	13.51																				1												
McClure	332	2	72.29																	1	1		1						1						
McConnelsville	1,771	1	6.77																				1							1					
Mentor	502	4	95.62																	1	1		1	1									2		1
Mt. Gilead	1,329	3	27.09		1															2	1		1									1	1		
Nelsonville	4,558	5	13.16	1																4	1	3	1							1					3
New Bremen	1,230	1	9.75			1																													
New Lexington	1,470	4	32.65		1																		4	1				1	1			1			
New Lisbon	2,278	1	5.27																														1		
New London	1,096	1	10.95																	1		1													
N. Philadelphia	4,456	5	13.46		1	1										1				1		1	2						1			1	1		
N. Straitsville	2,782	1	4.31	1																			1				1								
Norwood	4,500	4	10.66	1	1	1										1				1		1	1									1	1		
Oberlin	4,376	3	8.22																	3	1	2													

Oxford	1,922																																	1
Painesville	4,755	7	17.66		1														3		3	4	2					1			1			
Prospect	830	2	28.91																			2		2										
Ravenna	8,417	4	14.05	1															2	2		2									1			
Ringgold	100	4	480.00	1		1	1												1		1	2									2			
Riverside	2,168	6	33.21																			3					2				1	3		1
Sabina	1,080	2	22.22	1		1													1															
Sidney	4,850	8	7.42			1											1		1		1											1		
Smithville	482	1	24.89																													1		
South Brooklyn	4,585	4	10.47		2	2																2	1		1									
Tippecanoe City	1,465	4	32.09			1									1				1		1	2	1		1									
Waterville	376	1	20.47			1									1																			
Wellington	2,069	4	23.19																2		2	1										1		
West Liberty	1,207	2	20.00																1	1		1									1			
Wilmington	3,079	8	31.11			2											1		3		3	3	2	1										
Wyoming	1,454	2	16.50			1											1															1		
Totals	139,813	194	17.09	18	18	34	13	1				1			8	1	5		47	11	33	83	13	8	4	2	6	13	6		25	24	6	10

The following villages report no deaths for January: Ashley, Blake's Mills, Cridersville, Frankfort, Germantown, Glendale, Huron, Patterson, Perrysville, Port Washington, Somerville, South Charleston, Summerfield, Versailles, Wadsworth, Warsaw and Winton Place.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF FEBRUARY, 1894.

Eighty-four villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases	Total violence.	Premature and still-births.
Ada	2,079	1	5.77																	1		1													1
Amelia	660	1	20.00																				1		1										
Arcanum	1,134	4	42.32	1																			4					1	1	1		1			
Athens	2,640	4	18.18	1																1		1	3				1		1			1			
Ashland	3,566	8	26.12																	2		1	5									5		1	
Ashley	628	1	19 18																				1									1			
Ashtabula	8,333	13	18.47	4	4	6	6																4		1							1	3		
Bainbridge	1,087	3	33.11			1																	2	1								1			
Bedford	1,043	1	11.50																	1	1														
Bellevue	3,052	2	7.86	1		1						1								1	1														
Blanchester	1,196	2	20.06			1														1		1													
Bloomville	758																																		1
Bloomingburg	638	1	18.18																	1															
Bowling Green	3,467	5	17.30			4											1	3					1						1						
Bryan	3,068	4	15.61																				2						2				2		
Carthage	2,257	1	5.32			1	1																												
Chester Hill	676	3	53.25			2										2				1		1													
Chicago	1,299	2	18.47			1	1													1		1													
Clifton, Ham. Co	1,575	1	7.92																	1		1													
Clyde	1,227	6	53.62																				4						2			1	1	1	
Conneaut	3,241	7	25.90																	2	1	1	4					1	1			1		1	
Coshocton	3,674	8	26.14	1																2	1	1	4	1					1			1	1	1	1
Cuyahoga Falls	2,614	4	22.95			1									1					1		1	3						2			1			
East Palestine	1,816	2	12.21																	2		2													
Elmwood Place	1,980	6	36.36	3	1	1	1																3	1		1		1						1	
Fairport	1,171	3	30.74	2	1																		3				1			2					

Forest	1,136	2	21.31															1		1	1								1					
Garrettsville	1,146	3	22.94															2		2	1						1							
Germantown	1,437	2	16.70																		2	1					1							
Glendale	1,444	3	24.93	1														1		1	2						1	1						
Hanoverton	288	4	166.06			4	4																												
Hicksville	2,141	3	16.81															1		1	2						1		1						
Hubbard	1,498	2	16.02	1																	1		1												
Hudson	1,143																																		
Jamestown	1,104	2	21.73															1		1	1						1								
Kent	3,501	4	13.70	1		1								1							3				1		2							
Leetonia	2,826	2	8.49		1																2	1							1						
Lexington	432	2	55.54			1								1							1					1								
Linwood	1,291	3	27.87															1		1	1														
Lockland	2,474	1	4.85																		1														
Logan	3,119	5	19.23															4	1	3	1														
Lorain	4,863	8	11.51	2	4	3	2		1												1								1	3	1				
McConnelsville	1,771	1	6.77																		1							1							
Manchester	1,965	1	6.11															1		1															1
Marysville	2,810	2	8.54			1								1				1	1																
Mechanicsburg	1,459	4	32.87															1		1	2							1		1					1
Millersburg	1,923	1	6.24																																
Mt. Gilead	1,329	1	9.03															1		1															
New Albany	223	2	107.62			2									2																				
New Lexington	1,470	1	3.18															1	1																
New Lisbon	2,278	2	10.54															1		1	1		1												
New London	1,096	1	10.95			1					1																								
N. Philadelphia	4,456	5	13.46																		3								3	2					
N. Straitsville	2,782	3	12.93	1														1			1								1						
Norwood	4,500	2	5.33			1															1						1								
Oberlin	4,376	6	16.44																		6						3		1						
Osgood	242	1	4.91																		1														
Oxford	1,922	4	24.97			1												1	1		2	1					1								
Painesville	4,755	8	21.89																		7			1		1	1	1	3		1				
Peninsula	562	2	42.70																		2	1			1										
Prospect	830																																		1
Ravenna	3,417	8	28.09			2															3					2					1				
Reading	3,103	6	23.20	2	1													3	1		3	1	1		1										
Riverside	2,168	6	33.19																		5	1			3				1		1				
St. Bernard	1,779	2	13.49	1	1																2				1				1						
Sabina	1,080	1	11.11															1		1															
Senecaville	461	3	78.08															1	1		2								2						
Shelby	1,977	5	30.35	1														1			2	1	1								2				
Sidney	4,850	3	7.42																		3						1		1						1
South Brooklyn	4,585	2	5.23			1	1														1				1										1
S. Charleston	1,041	1	11.52															1	1																1
Thornville	405	1	29.62															1		1															
Tippecanoe City	1,465	4	32.76		1	1			1									1	1		2	1					1								1
Union City	1,383	4	37.12			2		1													2						1		1						
Wadsworth	1,171	5	38.72			1	1											1	1		3						3							

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, ETC.—Concluded.

Eighty-four villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Warsaw	376	1	20.47	.....	....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wash'gtonville	1,027	2	31.91	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Wellington	2,069	1	5.80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
West Cairo	575	1	20.86	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
West Liberty	1,207	1	10.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Weston	845	1	14.20	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wilmington	3,079	4	15.55	.....		1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Winton Place	1,600	2	15.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wyoming	1,454	4	33.01	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	2	.....	.....	1	.....	.....	.....	.....	.....	1	1	1	.....
Totals	164,312	254	18.37	25	14	44	18	1	3	.....	2	1	.....	.....	3	5	1	3	.....	58	15	31	124	11	6	3	10	7	31	8	.....	33	16	12	12

The following villages report no deaths for February: Cleves, Cridersville, Cumberland, Delta, Enon, Gilboa, Morristown, Murray City, North Lewisburg, Port Washington, Summerfield, Versailles.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF MARCH, 1894.

Seventy-eight villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera, morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Ada	2,079	2	11.54																	1	1													1	
Amelia	600	1	20.00																				1									1			
Anna	527	1	22.77																	1		1													
Ashland	3,566	2	6.73																				2									2			
Ashley	628	1	19.28																				1									1			
Ashtabula	8,338	16	23.02	2	1	5	4		1											1	1		6	1			1		2			2	3	1	
Athens	2,640	3	13.63																				3	1	1							1			
Bainbridge	1,087	2	22.08			1																	1									1			
Bellefontaine	4,245	4	11.30		3															1		1	3		1				1			1			1
Bellevue	3,052	11	43.21	1		1										1				6		5	2					1				1	1		
Blanchester	1,196	3	30.10			1																	2	1						1					
Broughton	202	3	128.71	1	1																		2				1								
Bryan	3,068	7	27.37																	3		2	1						1				3		
Buckeye City	215	2	111.62			1												1					1						1						
Carthage	2,257	1	5.32																	1		1													
Chicago	1,299	3	27.70			1	1													2		2													
Clifton, Ham. Co	1,575	2	15.24																	2	2														1
Clyde	2,327	1	5.15	1																			1							1					1
Conneaut	3,241	5	18.51																	2		1	2			1						1		1	
Coshocton	3,672	4	13.07	1	1	1	1													1	1		1									1			1
Cuyahoga Falls	2,614	3	13.77																				3						1			2			
Doylestown	1,131	2	21.22																				2						1			1			
Elmwood Place	1,980	1	6.06																	1		1													1
Fairport	1,171	3	30.74	1	1															1			1		1										
Felicity	779	3	46.21			1									1					1	1												1		
Forest	1,126	2	21.31																				1						1				1		

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, ETC.—Concluded.

Seventy-eight villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Garrettsville	1,046	2	15.29																	1		1	1												
Germantown	1,437	3	25.05			1											1			1		1	1		1										
Hicksville	2,141	3	16.81		1	1		1												1		1	1						1						1
Hubbard	1,498	4	32.04																				4									4			
Hudson	1,143	2	20.99			2	1									1																			
Huron	1,380	3	26.08																				2						2					1	
Jamestown	1,104	1	10.86																	1		1													
Kent	3,501	3	10.28			1												1					2							1					
Leetonia	2,826	1	4.24	1																			1				1								
Lexington	432	1	27.77																	1	1														
Linwood	1,291	3	27.87	1	1																		3						2			1			
Lockland	2,474	5	24.25	1		1														1			3							1		1			
Logan	3,119	5	19.23	1																			5		1				1			1			2
Lorain	4,863	5	12.33	2	1	2	1											1					1		1								1	1	1
Marysville	2,810	3	12.81																	1	1		2	2											
McConnelsville	1,771	4	27.08																	3		3	1						1						
Mechanicsburg	1,450	4	32.87			1									1					1		1											2		1
Millersburg	1,923	1	6.24																				1							1					
Mt. Gilead	1,329	1	19.03			1																													
Nelsonville	4,558	2	5.27																				2							1		1			
New Lexington	1,470	2	16.36																	1		1	1												
New Lisbon	2,278	5	26.16			4								3				1					1		1										
New London	1,096	2	21.89			2					1																								
New Straitsville	2,782	3	12.93																				3					1				1			
North Amherst	1,648	2	14.56																	1		1	1									1			
Norwood	4,500	4	10.66			1																	3						2						2

Oberlin	4,376	3	8.23																				3													
Oxford	1,922	4	24.97															1		1			3			1			1			1				1
Painesville	4,756	5	12.66															1	1				2						1				2			
Patterson	247																																			
Port Wash'gton	487	4	98.56			1	1											2		2			1				1								1
Reading	3,108	3	11.60	1														1					1								1					
Riverside	2,168	3	16.59																				3			1			1			1				
Rocky Ridge	483	1	24.84			1	1																													
Sabina	1,180	2	22.22															1		1			1													
St. Bernard	1,779	6	40.46																				5									5		1		
Senecaville	461	1	26.03	1		1											1																			
Shelby	1,977	1	6.07															1		1																
Sidney	4,850	6	14.84	1		2			2														1										2	1		
Somerset	1,127	3	34.92															1		1			2						1							
South Brooklyn	4,585	2	5.23			1	1																1						1							
S. Charleston	1,041	2	23.04																				1									1	1			
Summerfield	484	1	24.89																				1						1							
Tippecanoe	1,465	2	16.24			1										1							1													2
Union City	1,293	1	9.28																															1		
Versailles	1,385	2	17.32	1														1		1			1													
Wadsworth	1,574	1	7.62																				1	1												
Wash'gtonville	1,027	3	35.05			1								1				1		1			1						1							
Wellington	2,069	3	17.40															1		1			3													
Wilmington	3,079	6	23.38			2	1										1	1		1			2	1					1	1						
Winton Place	1,600	1	7.50																															1		
Wyoming	1,454	4	32.01															2		2			2						1			1				
Totals	160,096	232	17.34	17	10	39	12	1	3		1			3	3	2	1	5	2	51	9	36	111	7	7	3	4	2	26	7		35	17	9	16

The following villages report no deaths for March: Antwerp, Arcanum, Bedford, Cridersville, Enon, Glendale, Manchester, Morristown, Murray City, Prospect, Warsaw, Weston, West Liberty.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF APRIL, 1894.

Fifty-four villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Ashland	3,566	2	6.73			1			1											1		1													1
Ashley	628	1	19.28																														1		
Ashtabula	8,338	9	9.71	2	2	1	1													2		2	3										3	3	
Bainbridge	1,037	4	44.16	1																1	1		1										1		2	
Bedford	1,013	4	46.02	1																3		3	1								1					1
Bellevue	3,052	7	27.32		1	2						1								2		2	3	1								1	1			
Blanchester	1,196	2	20.07																				2		1	1										
Carthage	2,257	1	5.32			1														1		1														1
Clifton Ham. Co.	1,575	3	22.86			3	1												1																	
Clyde	2,327	1	5.15			1																														
Coshocton	3,672	1	3.24																				1					1							1
Cuyahoga Falls	2,614	2	9.18																	1		1	1									1			1
Doylestown	1,131	2	21.22			1	1													1		1													
East Palestine	1,816	1	6.61																				1						1						
Elmwood Place	1,980	2	12.12	1		1												1					1				1								
Forest	1,126	2	21.31			1			1														1									1			
Frankfort	667	4	71.96																	1		1	1						1				1	1	
Glendale	1,444	1	8.31																	1		1													
Hicksville	2,141	1	5.60																																
Huron	1,380	1	8.69																	1	1														
Kent	3,501	1	3.43																	1		1													
Linwood	1,291	1	9.29																															1	
Lockland	2,474	1	4.85																				1												
Logan	3,119	3	11.54																	3		3													1
Manchester	1,966	1	6.11	1																			1												
Millersburg	1,923	3	18.72																	1		1	1						1					1	1
New Bremen	1,293	4	37.04	1		1			1											1		1	2				1			1					
New Lisbon	2,278	1	5.26																														1		
New London	1,066	2	21.89			1														1	1														
N. Philadelphia	4,456	5	13.46	1																			5	1			1		2			1			
N. Straitsville	2,782	3	12.93	1		2											1						1												
North Amherst	1,048	2	14.56																	1		1	1					1							

Oberlin	4,376	9	24.69	2		3	1								1	1								4	1								1	1	1	
Painesville	4,755	11	27.76			1									1					3	1	2		6	1	1				3			1	1		1
Reading	3,103	4	15.47		3	2	2																	1					1					1		
Riverside	2,168	3	16.59																					3		1	1						1			
Rocky Ridge	483	3	74.52	1	2	1	1																	2												1
St. Bernard	1,779	2	13.48	1																				2				1					1			
Sabina	1,080	6	66.66	2	3																			6				2		1			2			
Shelby	1,977	3	18.21		1	1	1													1		1		1						1						
Sidney	4,850	8	19.76	1																1	1			5	1	1				2				1		
South Brooklyn	4,585	2	5.23	1		1																													1	
Smithville	482	1	24.89																					1						1						
Tippecanoe City	1,465	4	32.48																	2	1	1		1									1		1	
Union City	1,293	3	27.84		1															1		1		2						1			1			
Wadsworth	1,574	2	15.24																	1	1			1	1											
Warsaw	376	3	95.74																					3	1	1							1			
Wash'gtonville	1,027	1	11.68																															1		
Wellington	2,069	5	28.99		1	1			1											1	1			3	1					2						1
West Liberty	1,200	2	20.00			1	1																	1			1									
Weston	845	4	58.80		1	1			1											1		1		2		1			1							1
Wilmington	3,079	2	7.79																	1		1		1	1											
Winton Place	1,600	1	7.50																					1									1			
Wyoming	1,454	2	16.50																					1						1					1	
Totals	116,486	159	16.36	17	15	28	9		5			1			2	1	1	1	1	35	8	27		75	9	6	3	6	4	17	2	1	18	11	9	11

The following villages report no deaths for April: Enon, Garrettsville, Germantown, Gilboa, Jamestown, Lectonia, McClure, Morristown, Murray City, New Madison, Oxford, Patterson, Port Washington, Smithville, Summerfield.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF MAY, 1894.

Fifty-three villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Amelia	600	2	40.00																	1		1	1	1											
Ashland	3,566	5	16.82			1									1					1		1	3	1					2						1
Ashley	628	3	57.84			1																	1				1								
Ashtabula	8,338	13	18.70	2		1	1													1		1	7	2	1		2		1			1	3	1	1
Avondale	4,473	7	18.78	1																2	1		3			1									1
Bainbridge	1,687	3	33.11																	1		1	1				1						1		
Bedford	1,043	2	23.03																				2	1	1										
Blanchester	1,196	2	20.07																	2		2													
Broughton	202	1	42.90																				1				1								
Carthage	2,257	5	26.60			1										1				1		1	2							1			1		
Clifton Ham. Co	1,575	1	7.62																				1					1							
Clyde	2,327	2	10.30																														1		
Conneaut	3,241	7	25.91	1		2		1															4				1		1		1	2		1	
Coshocton	3,672	5	16.20																	2		2	2		1								1		
Cuyahoga Falls	2,614	8	36.72																	4	2	2	4			1			1			1			
East Palestine	1,816	2	13.21	2		1		1															1				1								
Elmwood Place	1,980	1	6.06																															1	
Forest	1,126	1	10.65																														1		
Germantown	1,437	1	8.35																	1	1														
Gibboa	264																																		1
Glendale	1,444	1	8.31																				1						1						
Hicksville	2,141	2	11.20			1																	1					1							
Hubbard	1,498	1	8.01	1		1													1																
Kent	3,501	2	6.86																				2												
La Rue	948	1	12.66																				1												
Leetonia	2,826	6	25.44																	1	1												4	1	
Lexington	432	1	27.77																				1												
Linwood	1,291																																		1
Lockland	2,474	5	24.25																	2	1	1	2						1					1	
Logan	3,119	2	7.70																	2	1	1													1
Lorain	4,863	5	12.34	3																			4		1			1	1	1			1		
McComb	1,030	4	46.60		1	1								1						1		1	1											1	

Manchester	1,965	6	36.66																			5										1		
Montpelier	1,293	1	9.28																			1						1						
Murray City	2,518	1	4.76			1										1																		1
New Lisbon	2,278	3	15.78																			2					2					1		
New London	1,096	1	10.94		1																												1	
N. Straitsville	2,782	2	8.62		1														1		1	1				1								1
North Amherst	1,648	2	14.56																1		1												1	1
Norwood	4,500	5	13.33	1	1																	4						1	1			1		
Oberlin	4,376	7	19.11	1															3		3	4			2	1								
Reading	3,103	6	23.20		2	2	2															4			1		1							2
Riverside	2,168	3	16.59			1					1											2				1	1							
St. Bernard	1,779	3	20.23			1	1															1					1						1	
Shelby	1,977	5	30.35	1		1	1												2	1	1	2	1					1						
Sidney	4,850	5	12.37	1		1										1						3						2			1		1	2
Smithville	482	1	24.89																														1	
S Charleston	1,041	1	11.52																														1	1
Tippecanoe	1,465	2	16.24																1		1												1	
West Liberty	1,200	2	20.00	1															1	1												1		
Wellington	2,069	2	11.60																1		1	1	1											
Wilmington	3,079	5	19.45																1	1		4					1	2	1					
Winton Place	1,600	1	7.50																1															1
Wyoming	1,454	1	8.25																														1	
Totals	117,732	166	6.92	15	6	17	5		2			1		1	1	1		2	1	34	10	22	80	7	4	5	10	9	15	4	1	5	18	15	15

The following villages report no deaths for May: Ada, Cridersville, Enon, Garrettsville, McConnelsville, Norristown, Napoleon, Port Washington, Plymouth, Smithville, Summerfield, Versailles, Wadsworth and Warsaw.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF JUNE, 1894.

Sixty-two villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsillitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Ada	2,079	3	17.31																	1		1	1									1	1		
Ashtabula	8,338	9	12.95	1	1																		4	3			1						2	3	1
Athens	2,640	4	18.18																	1		1											1	2	1
Avondale	4,473	7	18.78																	1		1	6		2	1		1	1			1			
Bedford	1,043	2	23.00			1		1															1						1						
Bellaire	3,052	3	11.46																	1			2		1				1						
Blanchester	1,196	2	20.07			1		1															1		1										
Bloomingburg	638	1	18.80			1		1																											
Bryan	3,068	6	23.46			1							1							2		2	2						1				1	1
Carthage	2,257	2	10.63			1										1							1								1				1
Catawba	272	1	44.11																															1	
Clifton, Ham. Co	1,575	1	7.61																	1		1													
Clyde	2,327	2	10.31																	1	1		1												
Coshocton	3,672	3	9.80																	2	1	1	1						1						1
Cuyahoga Falls	2,614	2	9.18																				1									1		1	
Doylestown	1,131	1	10.60																				1												
East Palestine	1,816	1	6.61																	1		1													
Elmwood Place	1,980	1	6.06		1	1	1																												
Elyria	5,611	3	6.41		3																		2						1				1		
Fairport	1,171	1	10.24																				1												
Frankfort	667	2	3[illegible].98																				2												
Franklin	2,729	8	35.18	2	4	4		4															3						1	1				1	
Glendale	1,444	2	16.62																	2	1	1													
Germantown	1,437	2	16.70																				2		1				1						
Hubbard	1,498	1	8.01																														1		
Jeffersonville	1,132	2	21.20			2	1	1																											
Junction City	894	3	91.39			1													1				1							1			1		
Leetonia	2,826	1	4.25			1													1																
Linwood	1,291	3	21.88																				2								1			1	
Logan	3,119	4	12.18		1	2										1		1		2		2													
Loraio	4,863	9	22.21	3		2	1		1														1					1					2	4	
Lynchburg	763	1	15.72			1							1																						

McConnelsville	1,771	3	20.33																	2	1	1												1
Manchester	1,965	9	54.96	1	4	7						6								1		1	1							1				
Montpelier	1,293	2	18.56	2		1																	1		1									
Nelsonville	4,558	1	2.61		1																		1							1				1
New Lexington	1,470	1	8.16																				1	1										
New Lisbon	2,278	2	10.53			1											1			1		1												
New London	1,096	2	21.89																													2		
N. Philadelphia	4,456	3	8.08																	3		3												
New Straitsville	2,782	4	17.25	2																			3							1			2		1	
Norwood	4,500	4	10.66	1																1		1	2					1							
Painesville	4,755	2	5.05	1	1																		1									1		1	
Port Wash'gton	487	1	24.64																				1							1					
Plymouth	1,183	2	21.20	1		1																												
Reading	3,103	4	15.46	2		2	2																2				1			1				
Riverside	2,168	2	11.07		1																		2				1				1			
Sabina	1,080	5	55.55	1																2		2	3				1		1		1			
Senecaville	461	1	26.01		1																		1							1				
Shelby	1,977	2	12.14																													2		
Sidney	4,850	4	9.89			1																	3					2	1					
Somerville	330	2	72.72																	2	1	1												
Smithville	482	1	24.89			1		1																										
South Brooklyn	4,585	1	2.61																				1										1	
S. Charleston	1,041	2	23.05																				2						1					
Thornville	405	1	29.64			1						1																						
Wadsworth	1,574	3	22.87																	2	1	1	1		1									
Wilmington	3,079	3	11.69																	1		1	2			1				1				
Winton Place	1,600	1	7.50																	1	1													1
Wyoming	1,454	1	8.25																				1						1					2
Totals	132,849	162	14.63	17	18	34	5	9	1			7	1	1		2		2	2	31	7	23	65	4	7	2	4	5	14	7	4	6	15	15	10

The following villages report no deaths for June: Ashley, Conneaut, Cridersville, Enon, Garrettsville, Lockland, Morristown, Murray City, Napoleon, New Richmond, St. Bernard, Summerfield, Union City, Versailles and Wellington.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF JULY, 1894.

Sixty-three villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro spinal meningitis	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fever.	Measles.	Puerperal fevers.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Ada	2,079	2	11.06																	1		1	1	1											
Ashtabula	8,338	11	15.83	4	2	3		1											2	2	1	1	1						1				2	3	1
Athens	2,640	4	18.18	2		2		1				1								1		1	1						1						
Bellefontaine	4,245	7	19.78			2	1					1								1		1	1									1			
Bellevue	3,052	2	7.86			1												1					1					1							
Bourneville	320	1	37.50			1												1																	
Berea	2,533	3	14.10			3		3																											
Canal Dover	3,470	4	13.80			4						4																							
Carthage	2,257	1	5.31																				1		1										
Clyde	2,327	1	5.15																	1	1														
Conneaut	3,241	5	18.49			1				1										2	1	1	2					1	1						
Coshocton	3,672	6	16.88																	2	1	1	1						1				2	1	1
Cridersville	465	1	25.81		1	1		1																											
Cuyahoga Falls	2,614	8	36.72	1	1	3		1					1					1		2		2	3		1				2						
Elmwood Place	1,980	5	30.30	1		1		1												3	2	1	1						1						
Elyria	5,611	9	19.24			2		2												2		2	5	1				1	2						
Fairport	1,171	2	20.49	2		1													1															1	
Fairview	322	1	37.26																				1					1							
Frankfort	667	2	35.98																				2												
Franklin	2,729	3	13.19	2		2		2												1															
Germantown	1,437	1	8.34	1		1		1																											
Geneva	2,194	1	5.49																															1	1
Glendale	1,444	1	5.30	1		1		1																											
Hicksville	2,141	2	11.21	1		1		1												1		1													
Jackson	4,320	9	24.97			4														1		1	2					2					2		
Jamestown	1,104	1	10.86																				1									1			
Junction City	394	2	6.09																	1	1		1						1						
Kent	3,501	5	17.14		1	1		1												1			3	1					2						
Lebanon	3,050	6	23.60			3						1						2		3	1	2													1
Leetonia	2,826	1	4.25			1		1																											2
Linwood	1,291	1	9.29																				1					1							
Lockland	2,474	8	23.80	1		5	1	3										1		1	1		1												2

Logan	3,119	4	15.39	2	1	2		2															2						1	1						1
Lorain	4,863	11	27.14	2	3	2		2												8		3	5	1			1	1	2						1	
McComb	1,030	1	11.65		1																		1								1					
Marysville	2,810	2	8.54	1																			2						2							
Minerva	1,139	3	31.60			1																	2													
Meigs Junction	2,408	2	9.97	2		2		2																												
Montpelier	1,293	1	9.20																																1	
Napoleon	2,764	1	4.34			1												1																		
Nelsonville	4,558	16	42.12	2	2	4		3				1								3		3	4		1			1	2						2	3
New Lexington	1,470	1	8.16																				1						1							
New Lisbon	2,278	5	26.33			3								1			1			1		1	1													1
New Richmond	2,379	1	5.04		1	1			1																											2
N. Straitsville	2,782	3	12.94																	1			1												1	
North Amherst	1,648	4	29.49			1									1					2	2														1	
N. Lewisburg	866	1	13.85																				1						1							
Norwood	4,500	7	18.66	4		4		4												1	1		1						1				1			1
Oberlin	4,376	5	13.71																				2			1							1			
Painesville	4,755	7	17.66	1		1														2		2	3		1			1	1				1			
Reading	3,103	4	15.46	2																																
Riverside	2,168	5	27.67	3	2	1		1															4	1			2		1							
Rocky Ridge	483	2	49.91			2							2																							
Sidney	4,850	5	12.87	1																1		1	4	1	1	1										
South Brooklyn	4,585	2	5.23			2												2																		1
S. Charleston	1,041	1	11.52																	1		1														
Tippecanoe	1,465	2	16.38																	1		1	1						1							
Versailles	1,385	1	8.66																	1	1															
Wadsworth	1,574	1	7.62	1																																
Wellington	2,069	4	23.19			1														2		2	1													
West Liberty	1,200	2	20.00			1		1															1					1								
Wilmington	3,079	7	27.29			4		3		1										1		1	2	1				1								
Wyoming	1,454	3	24.75	1	2	1							1																				1	1	1
Totals	157,403	230	17.54	40	11	78	2	38	1	2		8	2	2	1	1		8	5	46	13	30	69	7	5	2	3	12	25	1		3	10	13	18

The following villages report no deaths for July: Enon, McClure, Morristown, Murray City, Patterson, Plymouth, Summerfield, Union City and Winton Place.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF AUGUST, 1894.

Sixty-seven villages.	Population, census 1890.	Total deaths all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Ada	2,079	2	11.54			1		1												1		1													
Antwerp	1,331	5	45.09			2						1						1					1										1		
Ashtabula	8,338	19	27.34	6	4	12		5							1			1	5	2		2	3	1	1				1					2	1
Athens	2,640	4	18.18			3												2					1							1					1
Bedford	1,043	1	11.50																	1															
Berea	2,533	4	18.95			4		3					1																						
Blanchester	1,196	1	10.03			1							1																						
Bowling Green	3,467	8	27.69			3		2				1								3	2	1													
Bryan	3,068	4	15.64		2																		3							1			2		
Carthage	2,257	1	5.31																	1	1													1	
Clarksfield	264	1	45.45																	1	1														
Clyde	2,327	4	20.67		1	1						1								1	1		2												
Conneaut	3,241	4	14.81		2	2	1											1		1		1													
Coshocton	3,672	11	35.94	2		6		1			3							1	1	4	2	2	1	1									1		
Cridersville	465	1	25.80	1		1		1																											1
Cuyahoga Falls	2,614	6	27.54			2		1										1		1		1	3						2	1					
Delta	1,132	1	10.60			1	1																												
Doylestown	1,131	1	10.60			1						1																							
Elmwood Place	1,980	2	17.52																	1		1	1		1										
Elyria	5,611	6	12.83			1	1													2		2	3	2											
Fairport	1,171																																		
Fairview	322	1	37.26	1		1							1																						1
Frankfort	667	4	71.96		1															1		1	2												
Franklin	2,729	4	17.58		1															2		2	2	1					1					1	
Garrettsville	1,046	3	34.41			2		1		1													1							1					
Germantown	1,437	1	8.35																	1	1														
Greenwich	881	3	27.24																	1	1												2		
Hubbard	1,498	3	25.38		1	2		2																											
Jackson	4,320	11	30.55			5												3		2		2	1						1					2	
Junction City	394	4	121.82			1						1								1	1		2	1					1						1
Kent	3,501	7	21.18	1	1	3		2				1								2		2	1	1										1	
Larne	748	5	63.20			4		1			1	1																						1	

Lebanon	3,050																																		2
Leetonia	2,826	1	12.36																	1	1														
Linwood	1,291	2	18.58																				1					1						1	
Lockland	2,474	3	14.55			1																	1						1					1	
Logan	3,119	2	7.69	2																			2							1					1
Lorain	4,863	16	57.12	8		7		3										2	1				3		1			1			1	1	1	2	1
Lynchburg	763	1	15.72																				1						1						
Manchester	1,965	4	24.47		1															2		2	2				1		1						
Marysville	2,810	2	[illegible]			2												2																	
Me[illegible]b	1,050	1	11.[illegible]																				1					1							
McConnelsville	1,771	3	20.32			2												1	1				1						1						
Mechanicsburg	1,459	3	24.67		1	2												2					1												
Morristown	571	1	[illegible]																				1			1									
Murray City	2,5[illegible]8	1	4.76			1												1																	
Napoleon	2,761	1	4.24			1							1																						
New Lexington	470	[illegible]	8.16																				1	1											
N. Straitsville	2,782	6	25.88			1												1		1		1	3					2	1					1	2
North Amherst	1,648	4	29.19			2		2												1		1	1					1							
N. Lewisburg	866	3	[illegible].57	1		2						1	1										1		1										
Norwood	4,5[illegible]	7	[illegible]	3		1		1												1		1	3	1					1				2		
Oberlin	4,376	3	8.23																	2		2	1						1						
Painesville	4,755	7	17.66	2	1	3		2												1		1	3	1			1		1						
Plymouth	1,133	1	[illegible]																	1		1													
Reading	3,1[illegible]3	6	3[illegible]	3											1								1							1					1
Riverside	2,[illegible]6	1	2.[illegible]3	1	3																		1				1				1			8	
Shelby	1,977		18.21	1		1					1																						1	1	
South Brooklyn	4,585	1	2.6			1												1															1		
S. Charleston	1,04[illegible]	1	11.53																														1		
Sugar Grove	275	1	43.67																														1		
Uhrichsville	3,842	9	28.10			1														3		3	2	1						1				8	
Union City	1,263	4	37.12	1	1	1		1				1						2													1				
Wadsworth	1,[illegible]74	7	53.36			1														1		1	2		1							1	2	1	
Wellington	2,169	3	17.[illegible]9																				1												
Wilmington	3,079	4	[illegible]																	1		1	2		1	1								1	
Wyoming	1,1[illegible]4	1	8.25	1																													1		
Totals	17,136	249	[illegible].30	31	20	92	4	40	1	1	5	9	4	1	2	..	..	12	8	41	11	32	63	11	6	2	3	7	14	7	...	3	17	22	12

The following villages report no deaths for August: Ashley, Canal Dover, Enon, Mingo Junction, Summerfield, Tippecanoe, West Liberty and Winton Place.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF SEPTEMBER, 1894.

Sixty villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Ada	2,079																																		
Anna	527	3	68.3			2												2					1												1
Archbold	780	1	15.39																																
Ashley	628	1	19.1																														1		
Ashtabula	8,338	15	21.58	5	3	2		2												1		1	7	1	2		1	1			1	1	1	3	2	
Blake's Mills	390	1	30.77			1	1																												
Bloomingburg	638	2	37.62																														1	1	
Bryan	3,068	3	11.74																	2	1	1													
Carthage	2,257	2	10.63																	1	1		1							1					1
Clifton, Ham. Co	1,575	2	15.24																				1					1							1
Clyde	1,227	2	19.56																				1												
Coshocton	3,672	6	19.60			2													2	3	1	2	1										1		
Cridersville	465	1	25.80																	1	1														
Cuyahoga Falls	2,6[illegible]4	4	18.34			2												2																2	
Doylestown	1,131	1	10.61																	1															
Elmwood Place	1,980	2	12.12																	1	1	1	1		1										
Elyria	5,611	4	8.55																	2		1	2						1						
Fairport Harb'r	1,171	2	20.49	1		1		1															1						1						
Frankfort	667	1	17.90																				1												
Garrettsville	1,046	1	11.47																														1		
Germantown	1,437	1	8.34	1																1		1													1
Hartwell	1,507	4	31.84	1														2		1		1	2	1					3	1				1	1
Jackson	4,320	8	22.22			4		1															3												
Kent	3,501	4	18.71			1		1															1												
Larue	948	2	25.31			1												1					3						1						
Lebanon	3,050	5	9.06																	2		1	3	1			1		1						
Leetonia	2,826	3	12.73		2	2	1				1																								
Lockland	2,474	4	19.40	2		1			1														2	1		1								1	
Logan	3,119	3	11.54	1		2		1										1																1	
London	3,313	4	14.49			3		1				2											1	1											
Lorain	4,863	10	24.6[illegible]	2	4	2			1							1				2		2	4		1	1	1			1			2		1
Manchester	1,965	3	18.83			1						1								2	1	1													

McComb	1,680	4	46.61	1	1	2		1					1										2					1		1				
McConnelsville	1,771	2	13.55																1	1			1						1					
Mingo Junction	2,408	2	9.97			2	2																											
Mount Healty	1,067	3	33.74			2		1				1											1											
Murray City	2,518																								1									1
Napoleon	2,764	2	8.68			2												2																
New Bremen	1,230	2	19.89		1																													
New Lexington	1,470	1	8.16	1		1		1																										
New London	1,196	1	10.95																1		1													
New Richmond	2,379	6	30.26			3			2										2	1	1												1	1
New Straitsville	2,782																																	1
North Amherst	1,648	3	21.81		1	1					1												2	1										
Norwood	4,500	3	8.00	2																			3						1					
Oberlin	4,376	2	5.48																2		1													
Reading	3,103	2	7.73																				2					1				1		1
St Bernard	1,779	3	20.23	2		2		2															1									1		
Shelby	1,977	4	24.28		2	3	3																1	1										
S. Charleston	1,041	1	11.52																													1		
Tippecanoe City	1,465	2	16.38			1			1										1		1													
Uhrichsville	3,842	3	9.37	2		3		2																										
Union City	1,200	1	9.43	1		1						1																						
Versailles	1,385	1	8.66			1																												
Wadsworth	1,574	1	7.62															1		1														
Wellington	2,069	3	17.39																	1	1		1	1								1		
West Liberty	1,200	1	10.00																				1			1								
Westwood	1,050	2	22.85																				1			1						1		
Wilmington	3,079	4	15.59			1		1											2	1	1		1					1						
Wyoming	1,545	1	8.25																				1		1									
Totals	124,148	165	15.94	22	14	52	7	15	5		1	4	3			1		11	2	31	10	17	51	8	6	4	3	5	9	4	1	3	15	11	9

The following villages report no deaths during September: Glendale, Linwood, Midland City, Morristown, Patterson, Summerfield.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF OCTOBER, 1894.

Fifty villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Ada	2,079	5	28.86			1	1													1	1		2	1	1									1	
Ashley	6 8	1	19.44																				1	1											
Athens	2,641	2	9.99																	1		1	1										1		
Blanchester	1,196	5	50.07			1												1		2		2	1	1											
Carthage	2,2 7	2	10.63			1												1		1		1												1	
Chicago	1,299	1	9.23		1																		1							1					
Clarksfield	300	1	40.00		1	1					1																								
Clifton, Ham. Co.	1,575	1	7.30																				1	1											
Clyde	1,227	2	19.56			1																	1						1						
Coshocton	3,672	6	19.60			5	2	1										1		1		1													
Cridersville	465	1	25.80																1				1					1							1
Cuyahoga Falls	2,614	3	13.72			1												1					2						1						
East Palestine	1,816	2	13.21			2												1																	
Elmwood Place	1,980	6	36.36																				6		1		2	2		1					1
Fairport Harb'r	1,171	1	0.85																															1	
Felicity	779	1	15.59			1			1																										1
Frankfort	667	1	17.91																				1					1							
Garrettsville	1,046	1	11.47																				1						1						
Germantown	1,437	1	8.34																				1						1						
Hartwell	1,507	1	7.96																				1						1						
Jackson	4,3 0	8	24.22			2												2		2		2	3		1				1	1				1	1
Kent	3,501	10	34.30		2	4		1				1	2							2	1	1	3	1			1		1					1	
Lorne	948	5	64.29	2		3					1	1						1		1			1				1								
Lebanon	3,150	1	8.4	1																			1										1		
Linwood	1,291	2	10.84																	1		1	1						1						
Logan	3,1 9	4	15.40	1		2												1					2	1			1								
McConnelsville	1,771	3	20.31	1																2	1	1	1		1										
Mineo Junction	2,408	1	4.98			1	1																												
New Lexington	1,470	2	16.3																				2												
New London	1,[illegible]46	3	32.85																				3					1	2			1			
N. Philadelphia	4,456	5	13.46																	3	1	2	1			1								1	
N. Straitsville	2,782	1	4.31			1	1																												

North Amherst	1,648	2	14.56																	2		1							1					
Norwood	4,500	7	18.66	4	1	1		1										1	1	4	1				1		1			1				
Oberlin	4,376	3	8.22	1	1	1										1		1	1	1			1											
Painesville	4,755	5	12.62			1												2		2							1					1		
Plymouth	1,138	1	10.60																																
Port Clinton	2,049	4	23.42	1		2		2										2		2															
Reading	3,108	5	19.33															1		1	4			1			1								
Riverside	2,169	2	11.06			1		1													1		1												
Shawnee	3,266	7	25.72			4	4														1						1					1	1		
Shelby	1,977	3	8.21															1		1	1									1	1			1
Thornville	406	2	59.25															1		1	1				1									
TippecanoeCity	1,463	2	6.83															2	1	1														
Union City	1,293	3	27.29			2						2									1					1								
Wadsworth	1,574	4	30.48			1	1											1		1	2	1					1							
Wellington	2,069	5	28.97															2	1		1		1								2			1
West Liberty	1,200	2	20.00	1		1																											1	
Wilmington	3,079	2	7.79			1			1							1					1	1												
Winton Place	1,600	2	15.00															1		1	1													
Totals	102,225	152	17.60	13	7	42	10	6	2		2	2	4					11	1	32	8	22	61	9	7	2	7	7	13	5		5	6	7	7

The following villages report no deaths during October: Bryan, Enon, Morristown, Murray City, Summerfield and Wyoming.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF NOVEMBER, 1894.

Fifty-three villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Aberdeen	874	2	27.46																	1		1	1						1						
Archbold	780	1	15.39		1	1	1																												
Ashley	628	3	58.32		2	2													2				1		1										
Athens	2,640	2	9.99																	1	1												1		
Blanchester	1,196	3	30.10			1						1								1	1		1					1							
Bryan	3,068	4	15.64																	1	1		1										2		
Carthage	2,257	2	10.63																	1		1	1							1					
Catawba	272	2	88.23																	1	1		1	1											
Chicago	1,299	1	9.23																														1		1
Clarksfield	300	1	40.00																				1						1						
Clifton, Ham.Co	1,575	2	14.60																				2							1		1			
Clyde	1,227	1	9.78																				1		1										
Conneaut	3,241	4	14.81																				4	1			1		2						
Coshocton	3,672	2	6.53			1													1															1	
Cuyahoga Falls	2,614	3	13.72			1												1					2						1			1			1
East Palestine	1,816	4	26.42	1	2															1			2									1		1	1
Fairport Harb'r	1,171	2	20.50	1		1		1												1		1													2
Franklin	2,729	3	13.19																				3						2	1					
Germantown	1,437	2	16.68	1		1		1															1						1						
Hartwell	1,507	2	15.92	1																														1	
Jackson	4,320	2	5.56																				1						1					1	
Kent	3,501	5	17.15			4	1						2					1					1						1						
Larue	948	1	12.66		1																		1						1						
Lebanon	3,050	2	6.84																				2						1						
Leetonia	2,826	5	21.22	2		1							1							2		2	1									1			
Lexington	432	2	55.55			1														1															
Logan	3,119	1	3.85																				1												
London	3,313	6	22.94			3							2					1		2	1	1	1	1					1						
Lorain	4,863	9	22.23	1	4	4	2											1					5					3		1					
Mingo Junction	2,408	4	19.92		2	4	4																												
Napoleon	2,764	1	4.34			1	1																												
New Lexington	1,470	2	16.32	1	1	1	1																1									1			

New Lisbon	2,278	1	5.27	1																																
New London	1,096	2	21.90																			2														
New Richmond	2,379	4	20.16			1														1	1													2		
N. Straitsville	2,782	2	8.62																			1	1												1	
North Amherst	1,648	2	14.56																			2						1	1							
N. Lewisburg	866	5	69.28			3											3		2	1	1														
Ottawa	1,717	1	6.99																1																	
Port Clinton	2,049	3	17.56	1	1	2	2															1					1									
Reading	3,103	2	7.73																			1					1									1
Riverside	2,169	2	11.06																2		2															
Shawnee	3,266	8	29.40			5	5												2	1	1	1										1				
Shelby	1,977	6	36.42		1	1	1															3	1		1			1					1	1	
S. Charleston	1,041	3	34.56	1	1														1		1	2			1			1								
Sugar Grove	275	1	43.63																			1						1								
TippecanoeCity	1,465	5	40.95			1			1										4	1	1	1														
Union City	1,293	1	9.43																			1			1											
Wadsworth	1,574	6	45.72		2	4	4												2		2															
Wellington	2,069	3	17.39																1	1														2		
West Liberty	1,200	3	30.00																			2					1	1						1		
Westwood	1,050	3	34.26																2	1	1													1		
Wilmington	3,079	3	11.71																2	1	1	1		1												
Totals	106,693	152	17.09	11	18	44	2	2	1			1	5					7	3	33	12	16	55	5	3	3	1	7	18	5		6	11	6	6

The following villages report no deaths during November: Enon, Cridersville, Lynchburg, Midland City, Morristown, Patterson, Summerfield, Windham, Wyoming.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF DECEMBER, 1894.

Fifty-nine villages.	Population, census 1890.	Total deaths, all causes. Premature and still-births excluded.	Annual rate per 1,000.	Total under one year.	Total under five years and over one year.	Total zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Cholera morbus.	Diarrhœal diseases.	Dysentery.	Malarial fevers.	Measles.	Puerperal fever.	Scarlet fever.	Tonsilitis.	Typhoid fever.	Whooping cough.	Total constitutional diseases.	Cancer.	Phthisis pulmonalis.	Total local diseases.	Apoplexia.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Premature and still-births.
Ada	2,079	2	11.54																	1		1	1					1							
Athens	2,640	1	4.54			1												1																	
Avondale	4,473	6	16.09																	1	1		5						1			2			
Ashtabula	8,338	37	53.25	2	10	26	25							1									9	1			2		3			3	2		3
Bellevue	3,052	2	7.86																	1		1	1						1						
Blanchester	1,196	4	40.13																	4	1	3													
Bloomingburg	638	2	18.80			1												1		1															
Bryan	3,068	5	19.55	1	1															1			4				1								
Chicago	1,299	2	18.47	1																												1			
Clyde	2,327	2	10.32																	1		1	1						1						
Conneaut	3,241	4	14.81			1							1										3		1				1			1			
Coshocton	3,672	5	16.34																	1		1	3									2		1	
Copley	350	1	34.28																				1	1											
Cridersville	465	1	25.80																				1												
Cuyahoga Falls	2,614	7	32.13	1																2		2	3						1			2	1	1	1
East Palestine	1,816	2	13.22			1												1		1	1														
Elmwood Place	1,980	1	6.66																				1						1						1
Elyria	5,611	8	17.11																	2	1	1	4				1		1			1		2	
Fairport Harb'r	1,171	2	20.49	2																			2				2								
Frankfort	667	2	35.98																				1				1							1	
Greenwich	881	2	27.22																	1		1	1				1								
Hamden	622	1	19.29			1	1																												
Jackson	4,320	9	25.00																				6						1	4			1	2	
Kent	3,501	6	20.56			1												1		1		1	2			2			1					1	
Lebanon	3,050																																		1
Leetonia	2,826	4	16.98	2																			3						1			2			
Linwood	1,791	3	27.88																				3									2			
Lockland	2,474	6	29.10			1	1													3		3	1							1			1		
Logan	3,119	3	11.54	1																			2									1	1		
London	3,313	5	18.10	1		2			2											2		2	1				1								
Lorain	4,863	8	19.74	4	2																		5				1	1	1			2	1	2	3
Lynchburg	763																																		2

Miamisburg	2,952	3	12.19																	2	1	1	1					1						
Mingo Junction	2,408	2	9.77		1	2	1										1																	
Murray City	2,518	1	4.71	1																			1									1		
Nelsonville	4,558	4	10.53	1																			3	1					1			1		1
New Lexington	1,470	3	24.53																	2	1	1	1									1		
New Lisbon	2,278	1	5.27																	1		1												
New London	1,096	2	21.89		1																		1							1			1	
N. Philadelphia	4,456	4	10.77																				3		1				1			1	1	1
New Richmond	2,379	2	10.09			1							1																					1
New Straitsville	2,782	8	34.50		2	4	3													1		1	3		1				1			1		
North Amherst	1,648	6	43.68																	1		1	4					1	2			1		1
Norwood	4,500	5	13.33																	2		2	3	1	1			1						
Oberlin	4,376	4	10.97																	2	1	1	2						1			1		
Painesville	4,755	5	12.62																	1		1	3	1					1			1	1	
Pleasant Ridge	600	*6	10.00	2		1													1	1		1	1			1							2	1
Port Clinton	2,049	5	27.33	1	3	3		2								1							1					1					1	
Reading	3,103	3	11.60			1												1		1		1	1											
Riverside	2,169	2	11.07	2		1					1												1				1							
Sidney	4,850	2	4.95			1											1						1											
S. Charleston	1,041	2	23.05	1	1	1													1				1			1								
Summerfield	582	1	20.61			1													1															
Tippecanoe City	1,465	2	16.38																				2						1			1		
Union City	1,293	2	10.82																	1		1												1
Wellington	2,069	3	17.39	1																			3	1	1		1							
West Liberty	1,200	1	10.00																				1		1									
Westwood	1,050	3	34.28																	1	1		2	1					1					
Wilmington	3,079	4	15.59																	2	1	1	2					1		1				
Totals	145,663	229	18.86	24	21	51	31	2	2		1		1		2		1	7	3	41	9	30	107	7	6	4	12	8	26	3		27	14	13	15

The following villages report no deaths during December: Carthage, Enon, Franklin, Hartwell, Morristown, Plymouth, South Brooklyn, Wadsworth, Wyoming.

*For the year.

Summary of Mortality Reports..

The total number of deaths reported from all causes—excluding premature and still-births—by the towns represented in the foregoing tables was 23,993. The average population of the cities and towns represented was 1,372,133, which is equal to an annual death rate of 17.48 per thousand living population represented.

The deaths in 1,364,945 living population in 1893 were 23,794, equal to an annual death rate of 17.43 per thousand; while in 1892 (November, 1891, to November, 1892,) the total number of deaths reported in 1,265,070 population was 22.957, equal to a mortality rate of 18.14 per thousand.

The number of deaths reported each month was as follows:

January	1,886	July	2,547
February	1,861	August	2,311
March	2,027	September	1,846
April	1,825	October	1,916
May	1,905	November	1,920
June	1,982	December	1,967

The greatest number of deaths (2,547) was reported in July; the least number (1,825) in April.

DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE.

The number of deaths reported of children under five years of age (premature and still-born excluded), was 7,774, which is equal to 32 per cent. of the deaths from all causes, and a death rate of 6.38 per thousand population represented. The death rate of children under five the preceding year was 5.42 per thousand population represented.

The deaths by months, of children under five, were as follows:

January	527	July	1,010
February	500	August	982
March	531	September	674
April	529	October	620
May	601	November	596
June	680	December	524

The greatest number of deaths reported in children under five (1,010) was in July; the least number (500) was in February.

ZYMOTIC DISEASES.

The total number of deaths reported from zymotic diseases was 5,447, which is equal to 23 per cent. of the deaths reported from all causes, and an annual rate of 3.97 per thousand of the population represented.

The number of deaths reported the preceding year from zymotic diseases was 5,240, equal to a death rate of 3.84 per thousand population represented.

The number of deaths reported from zymotic diseases each month was as follows:

January	368	July	842
February	321	August	771
March	320	September	545
April	269	October	493
May	294	November	451
June	388	December	385

The month having the greatest number reported (842) was July; the one having the least (269) was April.

CROUP AND DIPHTHERIA.

The total number of deaths reported from croup and diphtheria was 981, which is equal to 4.09 per cent. of the deaths reported from all causes, and a death rate of .72 per thousand of the population represented.

The number of deaths reported the preceding year from these causes was 1,129, equal to a mortality rate of .82 per thousand of the population represented.

The number of deaths reported each month from croup and diphtheria was as follows:

January	101	July	48
February	83	August	60
March	68	September	68
April	69	October	108
May	64	November	155
June	41	December	116

The month having the greatest number reported (155) was November the one having the least number (41) was June.

CHOLERA INFANTUM, CHOLERA MORBUS AND DIARRHŒA.

The total number of deaths reported from cholera infantum, cholera morbus and diarrhœa was 1,527, which is equal to 6.36 per cent. of the deaths reported from all causes, and a mortality rate of 1.11 per thousand population represented.

The number of deaths reported the preceding year from these causes was 1,053, which is equal to a mortality rate of .77 per thousand of the population represented.

The deaths, as reported by months, were as follows:

January	14	July	545
February	14	August	429
March	22	September	202
April	20	October	87
May	33	November	34
June	101	December	26

The month having the greatest number reported (545) was July; the months having the least (14) were January and February.

MEASLES, SCARLET FEVER AND WHOOPING COUGH.

The total number of deaths reported from measles, scarlet fever and whooping cough was 965, which is equal to 4.02 per cent. of the total number of deaths reported from all causes, and a mortality rate of .7 per thousand of the population represented.

The total number of deaths reported from these diseases during the preceding year was 425, equal to a mortality rate of .31 per thousand population represented.

The deaths, as reported by months, were as follows:

January	53	July	95
February	52	August	91
March	67	September	79
April	56	October	78
May	89	November	122
June	107	December	76

The month in which the greatest number of deaths was reported (122) was November; the least number (52) was reported in February.

TYPHOID FEVER.

The total number of deaths reported from typhoid fever was 709, which is equal to 2.96 per cent. of the total number reported from all causes, and a mortality rate of .51 per thousand population represented.

The number of deaths reported from this cause the preceding year was 718, equal to a mortality rate of .51 per thousand living population represented.

The number of deaths from typhoid fever, as reported by months, was as follows:

January	55	July	45
February	40	August	92
March	48	September	98
April	25	October	109
May	17	November	67
June	32	December	81

The greatest number of deaths (109) was reported in October; least number (17) in May.

CONSTITUTIONAL DISEASES.

The total number of deaths reported from constitutional diseases was 4,185, which is equal to 17.44 per cent. of the deaths reported from all causes, and a mortality rate of 3.06 per thousand population represented.

The number of deaths reported from constitutional diseases the preceding year was 4,009, equal to a mortality rate of 2.93 per thousand population represented.

The number of deaths, as reported by months, was as follows:

January	344	July	391
February	322	August	377
March	405	September	313
April	337	October	326
May	350	November	326
June	356	December	338

The greatest number of deaths (405) was reported in March; the least number (313) was reported in September.

CANCER

The total number of deaths reported from cancer was 783, which is equal to 3.26 per cent. of the deaths reported from all causes, and a mortality rate of .57 per thousand population represented.

The number of deaths reported from this cause the preceding year was 694, equal to a mortality rate of .5 per thousand population represented.

The deaths, as reported by months, were as follows:

January	67	July	84
February	69	August	65
March	75	September	59
April	49	October	67
May	72	November	66
June	59	December	56

The month having the greatest number reported (84) was July; the month having the least (49) was April.

CONSUMPTION.

The total number of deaths reported from consumption was 2,712, which is equal to 11.33 per cent. of the deaths reported from all causes, and a mortality rate of 1.97 per thousand population represented.

The number of deaths reported from this cause the preceding year was 2,648, equal to a mortality rate of 1.93 per thousand population represented.

The number of deaths, as reported each month, was as follows:

January	240	July	232
February	212	August	251
March	282	September	185
April	246	October	190
May	228	November	197
June	235	December	214

The greatest number of deaths was reported in March (282), the least number (185) in September.

LOCAL DISEASES.

The total number of deaths reported from local diseases was 10,698, which is equal to 44.50 per cent. of the deaths reported from all causes, and a mortality rate of 7.79 per thousand population represented.

The number of deaths reported from local diseases the preceding year was 10,861, equal to a mortality rate of 7.9 per thousand population represented.

The deaths, reported by months, were as follows:

January	904	July	905
February	957	August	812
March	1,030	September	683
April	953	October	766
May	992	November	841
June	880	December	975

The month having the greatest number of deaths reported (1,030) was March; the one having the least number (683) was September.

BRONCHITIS, PLEURISY AND PNEUMONIA.

The total number of deaths reported from bronchitis, pleurisy and pneumonia was 2,828, which is equal to 11.79 per cent. of the deaths reported from all causes, and a mortality rate of 2.06 per thousand of the population represented.

In the preceding year there were 2,960 deaths reported from these causes, equal to a mortality rate of 2.16 per thousand population represented.

The deaths, as reported by months, were as follows:

January	308	July	169
February	330	August	117
March	315	September	97
April	304	October	153
May	288	November	220
June	243	December	284

The month in which the greatest number of deaths was reported was February (330); the least number (97) was reported in September.

CONVULSIONS AND MENINGITIS.

The total number of deaths reported from convulsions and meningitis was 1,554, which is equal to 6.48 per cent. of the deaths reported from all causes, and a mortality rate of 1.13 per thousand population represented.

The number of deaths reported from these diseases the preceding year was 1,676, equal to a mortality rate of .22 per thousand population represented.

eported by months, were as follows:

.....	119	July	128
.....	135	August	104
.....	187	September	95
.....	123	October	103
.....	141	November	136
.....	153	December	130

mber of deaths was reported in March (187); the September.

DEVELOPMENTAL DISEASES.

er of deaths from developmental diseases reported re and still-births) was 1,851, which is equal to 7 75 hs reported from all causes, and a mortality rate of opulation represented. During the preceding year ths reported from developmental di-eases, equal to

The premature and still-births, as reported by months, were as follows:

January	160	July	158
February	165	August	159
March	212	September	145
April	158	October	143
May	214	November	159
June	151	December	170

The greatest number (170) was reported in December; the least number (143) was in October.

VIOLENCE.

The total number of deaths reported from violence was 1,204, which is equal to 5.23 per cent. of the deaths reported from all causes, and a mortality rate of .88 per thousand population represented.

During the preceding year there were 1,233 deaths reported from violence, equal to a mortality rate of .9 per thousand population represented.

The deaths, as reported by months, were as follows:

January	73	July	142
February	83	August	131
March	69	September	109
April	83	October	99
May	101	November	100
June	128	December	84

The greatest number of deaths was reported in July (142); the least number in (69) March.

APPENDIX I.

Proceedings of a Meeting

of the

State Board of Health

and

Local Boards of Health of Ohio,

held in

Columbus, Ohio, January 24 and 25, 1895.

REPORT OF THE PROCEEDINGS

— of the Meeting of —

State and Local Boards of Health

— held in the —

Y. M. C. A. Building, Columbus, O., Jan. 24 and 25, 1895.

FIRST SESSION.

THURSDAY, 10:30 A. M., *January* 24, 1895.

The meeting was called to order by Dr. Byron Stanton, President of the State Board of Health, who, on taking the chair, spoke as follows:

GENTLEMEN: It is not expected that I shall address you at length in opening the work of this meeting. The object of our coming together is, doubtless, known to all of you. We have met as the representatives of the various boards of health of the State, for the purpose of conference upon matters relating to sanitary science, to increase our knowledge of the fundamental principles of health, to stir a little leaven into the public mind and give an increased impetus to all sanitary activities, to bring into harmonious action our various health organizations, to the end that sanitary laws and regulations may be better enforced.

It is a matter of great gratification that our meeting is so well attended and on behalf of the State Board of Health I thank you for this manifestation of your interest.

Our program shows some departure from the usual custom, and it is believed that by this means we may assist in clearing up some of the problems that loom up before those engaged in our line of work and give more practical range to the discussions, and thus meet more particularly the difficulties that beset the way of the practical sanitarian.

We are anxious to have those who have come here from the different parts of the State discuss the topics with which they are familiar, and I

am confident that valuable knowledge will come from a free exchange of thought. Work in this and other directions that may suggest themselves will well repay us for the time and money expended for this meeting.

I now call upon Dr. Kahle, who has had experience as a health officer, to tell us something about the duties of that office.

WHAT ARE THE DUTIES OF A HEALTH OFFICER?

By Dr R. D. Kahle, Member State Board of Health, Lima.

Mr. President and Gentlemen: On the efficiency of the health officer much depends. If he is a man of ability and a good sanitarian, he can do much to advance the cause of hygiene and hold in check those diseases that decimate our State.

The community in which he lives naturally looks to him to ferret out contagious and infectious diseases, and to use all means within his power to stamp them out of existence, and to use his office to make the place healthy, pleasant and happy.

It is not likely that any great epidemic will again visit our country, such as small-pox, cholera, typhus fever, or the plague, although cases may occur in different localities. We must not forget that scientific, rational, intelligent hygiene is a thing of the present generation; yet we have made rapid progress in that time, and few subjects are more popular or more calculated to advance the interest of the State, or to yield larger returns both as to material wealth and happiness for the labor and money spent. The measures looking to the prevention of disease by the use of scientific methods are modern. The maxims of Hippocrates, the ceremonial of the Hebrew law as to bathing, and the establishment of quarantine are almost the only exceptions. For the most part suffering has been regarded as an infliction of the gods, or a dispensation of Divine Providence.

The law passed March 14, 1893, creating a board of health in each township of the State, as well as each city and village, is certainly a wise provision; as working in harmony with the State Board, it gives concert of action that bears fruit in our State. It is mandatory for the city and village boards to appoint a health officer, and the township boards may, and I believe should, appoint one. The law only in part defines the duty of the health officer, but gives the board of health power to do so. He is powerless without the action and co-operation of his board, as he is an officer of said board, and must execute the order and rules passed upon by them. He has no authority within himself, but his jurisdiction is given him by the board of health of which he is the executive.

Where possible, the health officer should be a physician. The perfecting of sanitary science depends largely upon the physician, who has done more than all others in the cause of hygiene; and to him we must look for advancement in the future.

It is unnecessary to call your attention to the progress sanitary science has made, more than to mention that man's lease of life has been lengthened, and his surroundings made more healthful and pleasant, as well as more secure. When the periods of infancy and youth are made as secure and free from disease as adolescence, when contagious diseases are held in check, such as small-pox, or obliterated completely, then we will have reached a triumphal period in our history. There has been inaugurated international hygiene, a system of sanitary administration which in my judgment is destined to control, suppress, and finally exterminate contagious and infectious diseases.

The people should be alive to the fact that a well paid health officer, supported by well framed and comprehensive laws, is as much of a necessity to the common weal as a well paid mayor, police, sheriff or township clerk. Where it is rightly understood, hygiene is to-day one of the most popular of subjects. The local board of health naturally looks to the health officer to keep it informed on sanitary matters, and through him

most all communications reach the board. The members of the board are not selected on account of their sanitary knowledge, but are frequently men of sound judgment, who are anxious to do all in their power for the best interest of the community, and can readily discern what is meritorious, and what is not, when rightly presented to them; and very properly they rely on their health officer for advice and direction.

Not the least important duty of the health officer is his dealings with contagious diseases. It is very essential that small-pox, diphtheria, scarlet fever, measles and kindred diseases, be promptly reported to the health officers, who should, without delay, have the house placarded and properly quarantined, and use every available means known to prevent the spread of these diseases. Quarantine should be so regulated as to give the greatest safety with the least interference possible with the public. There are times when a house to house inspection should be made, for all contagious diseases are not reported by those in attendance, they either failing or refusing to report the same. There are places where the number of deaths from a contagious disease is greater than the number of cases reported.

The principal of schools, or school teacher, should be notified, and children from families where contagious diseases exist should be prohibited from attending school as long as there is danger of contagion. In case of death, public funerals should be absolutely prohibited. The health officer should either see personally, or through a competent sanitary policeman, that the room in which an infectious disease has been is properly and thoroughly disinfected. Those exposed to small-pox, cholera, typhus or yellow fever, should be kept under surveillance until all danger is passed. Railway cars, steamboats and other conveyances should be disinfected after carrying persons afflicted with any of these diseases.

A burial permit should be required in all cases, and an accurate record kept of all deaths, with the cause and duration of the illness. Death reports are of but little value unless they are full, accurate and complete. A partial report of the deaths is misleading and cannot be relied upon.

The way to obtain data on these subjects is by thorough registration of vital and mortuary statistics. All births, deaths and contagious diseases should be accurately recorded. The cordial co-operation of physicians and undertakers should be solicited in making the data of these reports accurate and complete. It is desired to make these vital statistics an unanswerable argument in favor of systematic public sanitary work, and the granting of State and municipal funds necessary for maintaining such work. Prompt reports should be made to the Secretary of the State Board of Health, where a complete report of the State is compiled. Every locality should secure to its inhabitants homes so healthful that they would defy the potency of filth diseases. It is incumbent upon the health officer to see that all nuisances are abated, not only those which are detrimental to health, but those that are offensive to the sight or disagreeable to the sense of smell.

A few years ago an effort to instruct the public in the management of their own homes, such as plumbing, drains, cisterns, cellars, water supply, light, heat and clothing, especially any intimation that kitchen, yard, alley or out-houses were filthy, would have been regarded as an impertinence. Such suggestions are now received, often solicited, and made the basis of action. It is the duty of the health officer to keep the public informed as far as possible on these subjects. Where not otherwise provided for, he should inspect dairies, slaughter houses, slops, water and food supplies for animals, and kindred subjects relating to public health.

He should also collect scientific data in regard to altitude, climate, water supply, density of population, sewerage, proportion of sewered and non-sewered areas, and other points bearing on the healthfulness of the place, which will permit of interesting comparison with the sick and death rate, and he should trace, as far as possible, the source and means of conveying diseases. He should be familiar with the health laws of the State, with the rules and regulations of the State Board of Health, and see that they are

properly and promptly enforced. Wherever sanitary laws have been enforced, the death rate has diminished. Sanitary rules are worthless if not faithfully executed, and yet no class of laws is so difficult of enforcement as those designed to protect the public health. In their practical application to be effective in the control of contagious and infectious diseases, individual rights, religious observances, commercial interests, and even national customs, must be subordinated to the exigencies which these pestilences create. It has been held that health laws are anomalies in civilized governments. They arbitrarily set aside ordinary laws because they are adapted to anomalous conditions of the people.

Section 2136 of the Revised Statutes of Ohio reads as follows:

"It shall be the duty of the board of health, or health department, on or before the first Monday of March in each year, to make a report, in writing, to the council of the corporation and to the State Board of Health upon the sanitary condition and prospects of such city or village, which report shall contain the statistics of deaths, the action of the board and its officers and agents, and the names thereof for the past year; and it may contain other useful information, and the board shall suggest therein any further legislative action deemed proper for the better protection of life and health; and it shall be the duty of said board of health, and health departments, to promptly furnish special reports as may be called for by the State Board of Health." (O. L., Vol. 90, March 14, 1893.)

This is an important section of the State law, and the health officer should see that it is fully complied with.

To recapitulate, the health officer—

1. He should be a physician where possible.
2. He should keep the local board of health informed on sanitary matters.
3. He should placard and quarantine contagious diseases.
4. He should notify the principal of schools, or school teacher, of contagious diseases.
5. He should see that places where contagious diseases have been are properly disinfected.
6. He should prohibit public funerals when death has occurred from contagious diseases.
7. He should require a burial permit in all cases.
8. He should see that accurate records are kept of births, deaths and contagious diseases.
9. Prompt reports should be made to the Secretary of the State Board of Health.
10. He should inform the public on sanitary matters.
11. He should inspect dairy and food supplies.
12. He should collect scientific data.
13. He should trace the source of disease.
14. He should be familiar with, and enforce the health laws and rules of the State Board of Health.
15. He should make a complete and comprehensive annual report.

I thank you, gentlemen, for your attention.

The Chair: Gentlemen, this paper is now before you for discussion. It is desired that every paper presented shall be fully discussed. That is what we are here for. I think it would be desirable to have short speeches in order that each may have a chance to say something.

A Member: Mr. Chairman, I move the time be limited to five minutes. (Motion seconded and carried.)

The Chair: I would request that all rising to speak for any purpose, shall speak distinctly, so that the stenographer may be able to accurately

report the remarks that are made. Also, please give the name so that the record of the proceedings will show who has taken part in the discussion of the various subjects on the program.

This paper is now before you for discussion. It is in my opinion a very important subject, and I hope that some of you who have had experience will say something on the subject.

After the lapse of five minutes, no one desiring to discuss the subject, the Chair announced the next topic.

HOW MAY THE HEALTH OFFICER OBTAIN CORRECT AND FULL NAMES OF INFANTS?

(*Proposed by Board of Health of Hartwell.*)

Discussion opened by DR. W. B. HEDGES, Health Officer, Delaware.

MR. PRESIDENT: The question proposed, "How may the health officer obtain correct and full names of infants?" might, in the present state of affairs, be very properly answered by asking the question, "How may health officers obtain a report of the birth of a child at all?" It is a notorious fact, that this requirement of the health department of municipalities is almost totally ignored by physicians and midwives. It is only in the larger cities that birth reports can be obtained, and I believe that I am safe in making the assertion that the rule of the State Board of Health requiring mortality reports, is to an equal extent violated; hence vital statistics, as now obtained by our State Board of Health, are totally unreliable and worthless for the purposes intended. The State Board of Health is doing all in its power to correct this evil, but with the limited authority it has, cannot be expected to accomplish the desired end. The law creating boards of health would appear in theory a sufficient guarantee to secure a full and satisfactory report of vital statistics, but, practically, it is to a great extent a failure. How many municipalities in the State report to the State Board of Health statistics of any sort? I will venture that not one in fifty do it. The law now constitutes township trustees boards of health, with about the same authority possessed by boards in towns and cities; but how many townships in the State return to the State Board a report of vital statistics—very few, I fear. What is the matter that such a state of affairs should exist? Something certainly is wrong, either with the law itself or the execution thereof. Both are perhaps at fault. Now, if we cannot obtain reports of births, as now required, how can we hope to get such a report with the addition of the full name of infants, thus adding very greatly to the trouble of making such reports. In this matter we must look chiefly to physicians for aid. My experience has been such as to cause me to feel that little can be hoped for from the medical profession in this line under the present laws or regulations. Many physicians refuse to make reports without remuneration, others, for various reasons best known to themselves. In fact, I have found many physicians opposed to nearly all of our health regulations, and especially birth reports, for they will tell you that the assessor looks after the births in his rounds once a year, and many other excuses are offered for the purpose of avoiding the little trouble it makes them to fill out the blank furnished by the board of health. I am well aware of the fact that boards of health and health officers have the power delegated to them by the authority creating them to prosecute delinquents; but, after all, this is a very unpleasant thing to do, especially in the smaller places. The health officer is usually a physician, and he will hesitate a long time before arresting a brother physician, one that is, perhaps, his warmest personal and professional friend. The duty thus devolving upon him is a very unpleasant one, and one from which the bravest may shrink. To obtain the full names of infants, it appears to me that we must look to other sources than physicians and mid

wives. A State law making it obligatory upon parents to report to the health officer or board of health, the full names of infants, with sex, date of birth, etc., within a certain specified time after birth, with a severe penalty attached in case of failure to comply with such law, might, perhaps, secure the desired end. But I am fully convinced of the fact that the collection of vital statistics will not be full, and anything like complete, until the United States government takes the matter in hand and passes such laws as will make this subject uniform throughout the country.

A national board of health should be established by Congress, and a commissioner of health or national health officer appointed, and made a cabinet officer, whose duty it shall be to administer the national health laws. Boards of health should be required in every State and territory, and made auxiliary to the national board, and municipal and township boards auxiliary to the State boards. The State boards should be required, under heavy penalty, to make returns of vital statistics, contagious, infectious and epidemic diseases. To State boards should be delegated authority to compel township and municipal boards to faithfully report such statistics. Laws governing the health department of the country should, to be effective, be made by the national government, and executed under the supervision of a national health officer. If such laws can be made under our peculiar form of government to not conflict with the Constitution, and at the same time apply to the States, they could be much better enforced than State and municipal acts. Moreover, it appears that laws governing the collection of vital statistics should be uniform throughout the Union to make such statistics valuable, upon which to base an estimate of the health, etc., of our people. In this way only can the question, "How may the health officer obtain the correct and full names of infants?" be answered.

The Chair: This paper, gentlemen, is now before you for discussion. I would like to have each paper thoroughly discussed. Are there any remarks?

Dr. Waltz, of Collinwood: There are some things contained in that paper with which I agree, and others I don't like at all. In the first place it lacks backbone. Now, it seems to me that if the law is properly enforced such records of vital statistics could be obtained. In the first place you can pass a resolution requiring physicians to report, and if they do not report, arrest them. About a year ago I found a number of physicians who did not report their cases. I simply notified them that unless they reported every one of them, they would be arrested.

There is another thing I think is worse than all that, and that is to get reports of births where physicians are not employed. There are a number of that kind of cases. I say that a physician that is a health officer should have plenty of backbone, and I believe that is all we want and need—to have the moral courage and not be afraid to make them come to time, and they will think as much of you in the end.

The Chair: Are there any further remarks?

Dr. Hoover, of Columbus: What I am going to say might, perhaps, place me in a peculiar position, being a member of the State Board of Health, and consequently desirous that all of its rules shall be properly enforced. You may think strange that I am going to present a plea in behalf of the violators of some of the rules, but I am a doctor also. I want to state in the beginning that (I was going to say ninety per cent.,

but I guess, perhaps, I will not miss it very much when I say one hundred per cent) of everything that is done for the benefit of the public health is done by the medical profession, and it has been done in the face of the strongest opposition from the very persons who are most benefited by it. I have been a member of the State Board since its organization, and the laws that have been passed since the original bill have been secured by most persistent effort on the part of those interested in sanitary science, and they have been almost without exception doctors. Whenever we can educate legislators up to the point where the value of the life of an individual is regarded anywhere near equal to the value of a short-horn bull, then we may expect to get such laws passed as will preserve the public health. The very minute anything is done looking toward the conservation of the public health, the very minute a bill is offered in the Legislature, that very instant it is announced that it is some doctor's measure, and they proceed at once to kill it. Doctors have enough to do, and they do more than their duty every time without hope of reward; and if they did not, God help humanity. While I admit, and this may make my position seem somewhat anomalous, it is a rule of the State Board of Health requiring doctors to make these reports, and while I am glad to see that some of our health officers have pluck, I want to say frankly that there is no use in going behind the fact that it is a successful case of bluff, and it is not anything else. I question very seriously if any doctor could be compelled to make that report without compensation. It is a question of personal right that has never been tried as yet. I say this before a class of men in whom I have confidence enough to believe that they are not taking advantage of anything of that kind; we are here not because the law says we shall meet here, but because every one of us has enough interest in the public health to take the time and bear the expense to come here and discuss matters of public importance. I believe, gentlemen, that it is the duty of the health officer to collect these names, and I believe that he ought to be paid enough to justify him in getting the names. I think Dr. Hedges' paper a good one, and I think Dr. Hedges lacks just about as much backbone as I would lack, simply because there is the fact that stares you squarely in the face, that you can not require labor of anyone for nothing. Try it on the laboring man if you want to find out. You come to the doctor, as our friend over there said, and you say, "You have got to report so and so, or I will have you arrested." Why, the doctor simply reports. In the first place, because he is wholly a man and he doesn't want even to shrink from such a small duty, however irksome it may be. Secondly, because he is accustomed to work for the good of humanity without hope of reward.

Dr. Davidson, of Hilliards: I want to say that I am in favor of backbone as much as anyone in the world. There are a number of cases which are not attended by physicians, especially among the German people, and I don't know what we would do if we had to run around and look after names. If we were paid for gathering these statistics we would make the effort. I think Dr. Hoover is right, that we ought to be paid, and it is not our duty unless we are paid.

Dr. Ebright, of Akron: Some things in that paper I agree with, and with some things Dr. Hoover has said; other things he has said with which I do not agree. First, I do not agree with the doctor when he says that all physicians, or that any physician does more than his duty. I don't believe that any man who follows a profession like this, the medical profession, can ever do more than his duty as a citizen. He may possibly do more than he should do so far as his family is concerned, but I don't believe that he can do more than his duty. The question, however, is not as to whether Dr. Hoover is right. It occurs to me, in my experience of a number of years in the health office of a populous city, that it is not much trouble for a health officer to do anything he wants to do. In the first place he should understand that in an epidemic or anything of that kind the people will, so far as they can, aid him in doing that which is best for the interest of themselves and their children, and the health of the community. I believe that every health officer can secure the hearty co-operation of every physician with whom he comes in contact. In the first place the physician through education, gets to be a generous-hearted animal, and is willing to do anything he can to assist a brother physician in carrying out what the physician deems to be his duty. Now as to vital statistics, the birth statistics; I promise you, gentlemen, that next year there will be a report of nearly all the births in my city; they will not fall short five. Our board is now preparing an ordinance for that work. We will send every physician in the city a blank book on which in a minute and a half he can place the birth, the name of the father and mother, the residence, and date of birth, and drop it in the postoffice. The busiest man I can find is the best man I can get to do what I want done. A busy man is an energetic fellow, and is ready to work. A man who has no business is either idle from necessity, by reason of his indolence or a lack of qualification. An energetic doctor always has business, and is always willing to do everything he can. God bless the doctors. They are always willing to work. They don't get blessed in the right way. They get blessed enough in one way, that's true. The busy physician will always find time to make out his report, and I want to say to you that the busiest

physician in the city of Akron with whom I come in contact as health officer, is the first man to send in his report.

Dr. Hoover, of Columbus: I want to ask our friend from Akron if that is not an exceptional town. [Laughter.]

Dr. Bridinger, of Tiffin: I cannot exactly agree with what the doctor said in his paper. I think it is a little "off," defective in some things, in other matters it may be all right. I believe very much the same as does the gentleman who just sat down. I have been health officer of Tiffin for ten years, and I can say that I have had no difficulty in collecting reports of births and deaths. Neither do I find any difficulty there to have physicians report contagious diseases. We are working in unison, and it is true, as the gentleman said a moment ago, it is the energetic physician, the one who has the largest practice, who is willing to work and who can be relied upon for first reports. I would not hesitate a moment to arrest a physician, although I am one myself, if he did not comply with our rules and regulations. A short time ago I had a physician arrested for failing to report a case of scarlet fever—physician and his son. The rest of the physicians, twenty-four in number, stood right by me and said I was right, because this physician and his son were negligent in reporting. The only trouble is the collection of births, but for the last four years I have not had much trouble because I collected them once every month. I have been since the first of January collecting reports, and they are not all in yet. A good many feel that they should be compensated for it. My idea is, and I shall lay it before the next board meeting, to furnish the physicians with postal cards, and whenever they attend a birth instruct them to fill the card out and send it in. I am satisfied in that way we will get every one. Really I don't think I have missed five births in the five years. I have never had any difficulty in getting the physicians to co-operate with us in the matter.

Dr. Young, of Chicago Junction: That is very much the same system we have adopted at our place. I furnished each one of the physicians a blank, together with a stamped envelope. Every month the report is sent to me. Physicians failing to report, I see personally, and it is required that the undertakers shall procure the doctor's death certificate before the burial of a person, consequently I have reports of every death. Those are filed away every month.

Dr. Shaw, of Sidney: That is about the same kind of an arrangement that we have in our place. The health officer receives $100 per year for his work. I remember a few years ago that there was a case of contagious disease in the family of one of our citizens, and the physician neglected to report the case, as was his duty, but our health officer notified him to appear before the board and show cause why he did not make the report,

and since that time we have had no trouble at all, and our reports are made in due time.

Dr. Hopkins, of Ashtabula: I have been much interested in the discussion. I agree with Dr. Ebright in regard to the matter. The fact is this: We can all get, if we are trying and working on the right track, the reports without any trouble. I find that in our city a few of the births have not been reported, for the reason that we have quite a good many foreign population. Among those we have many midwives, from whom I get reports. Our physicians, to a man, have come down with their reports very well. I adopted this plan: I furnished them a postal card on which to make their reports to the health officer of births and deaths, and receive the reports in twenty-four hours. I also compel certificates to be furnished undertakers before they can bury the dead, and I get the deaths in that way also. I get reports very thoroughly, I think, from all our physicians. It is difficult for us at all times to obtain reports of births where there is not a recognized physician or midwife in attendance. It is supposed to be a State law, or an inflexible rule of the State Board of Health that our physicians shall report, that they must report, under the law. If Dr. Hoover thinks that there is no compulsion about that, and thinks they could not be compelled to make reports, what is the use of our State Board making such rules? We have made rules to correspond as far as possible with the rules made by the State Board of Health. We endeavor to strictly live up to them. If a doctor in my place should refuse to make a report, I would have no hesitancy in promptly arresting him. I don't care whether he is a doctor or what he is; that is my duty. Now, if you should say to me, "Arrest and be hanged," I should feel a little chagrined. If we can't back that thing up, I want our State Board, Brother Hoover, to back out and say that that law is not law.

Dr. Hoover, of Columbus: I think the gentlemen have been a little off on this paper. This paper does not refer to the report of births. It did not say anything about that. How many of the health officers get the accurate and full names of infants? In Columbus, even such an obscure town as this, we succeed in getting more or less accurate reports of births, but I know of two or three instances where I was a party to the transaction that the child has not been named yet, and I am not going to find out when it is. I don't think you can compel me to. Now, as far as the enforcement of the law is concerned, that is all right, and I am glad to find out that so many of our brethren have got backbone. So far as the reporting of births is concerned, that is all right, but I will not go around and ascertain the name or name the child. Now, gentlemen, speak to the point.

Mr. Truex, of New Straitsville: At our place I get accurate reports, I think, of births. What bothers me is to get the names. I was assessor five years, and I ran across a child five months old that was not named. I named it for them. I would like to find out how to get the names. So far as the births are concerned, I get them every month on blank certificates furnished for that purpose.

A Member: As Dr. Hoover has said the paper refers to the obtaining of the full names of infants The law of the State, if there is a State law upon the subject, requires all births reported within the first ten days of the month succeeding that in which the birth occurred. I believe that is the substance of the State law on that point. Very few children are named within ten days after they are born, and sometimes longer, in which case it is of course impossible to obtain the name. The important thing is to record the births and names of the parents. In my experience as health officer, there has been no trouble whatever to obtain reports of births, but the greatest difficulty I had was in obtaining reports from physicians. They are very negligent in regard to reports.

Dr. Hedges, of Delaware: I have been much entertained with this discussion. I desire free discussion and free criticism of what I say. My own experience has been rather unfavorable in the way of collecting reports. In our town we have twenty-five physicians and four or five undertakers, and in some manner the reporting of vital statistics and statistics of contagious diseases and deaths has dropped out. But I became health officer and I have endeavored to have it re established on a sound basis, and I hope yet to have it done; but up to the present time it has been a failure. Our undertakers have refused to ask for burial permits. Some of our physicians refuse to make reports; and I will disagree with some of the previous speakers that it is the busy physician who gives the best attention to reports. I find it the other way. One who has the largest practice in the town refuses to make the required reports. Of course, I can have him arrested, but it is not a pleasant thing to do. I have asked our board of health to support me in having these rules strictly enforced, and am sorry to say I have failed to get the support that I expected, but hope yet in the future to do so. As to obtaining full names of infants born, I do not see how we can do such a thing. I have no idea that any such a rule could be enforced at all to be anything like satisfactory.

The Chair: The next paper on the program, gentlemen, is a paper by Dr. Ebright, health officer of Akron. I will say, in explanation, that when this letter was transmitted to Dr. Ebright asking him to open this discussion, the word "school" was omitted, and he has prepared his paper on the ventilation of public buildings.

TO WHAT EXTENT, IF ANY, IS A BOARD OF HEALTH AUTHORIZED TO REGULATE THE SANITARY CONDITION—LIGHT, HEAT AND VENTILATION—OF SCHOOL BUILDINGS?

(Proposed by Board of Health of Sycamore.)

By Dr. L. S. Ebright, Health Officer, Akron, O.

Mr. Chairman and Gentlemen: I want to tender my sincere thanks to the President for the kind apology made to you for me. However, there is another thing he omitted to say in connection with this paper and myself—to apologize for selecting me to open this discussion. Why a doctor should have been asked to discuss questions of law I can't understand. I have studied law, but do not discuss it very much, and if you gentlemen want to disagree with me, I have no objection. However, I shall do the best I can and leave the matter with you people to rake me over the coals as we did Bro. Hedges. [Laughter.]

The importance of any branch of sanitary science in connection with the powers of boards of health may be determined, first, by the dangers arising from unsanitary conditions; second, the number of persons who may be affected by such conditions; third, the expenditure necessary to a fair and impartial transaction of the business involved, measured by either of these standards. The subject before us is of exceeding importance to the people of this great commonwealth, and especially to those residing in our most populous towns and cities. First, because it involves, as is indicated, the power of boards of health to regulate and improve the conditions of all public buildings, namely, places where the people generally are in the habit of congregating. Secondly, the health and comfort of not only those who frequent these places, but of all with whom they may come in contact.

With the former we have most to do in this discussion. And, indeed, to discuss the latter in all of its multifarious forms would require more time and space than would be allotted to us, since I take it that our worthy President does not intend a single individual to monopolize all the time of this meeting.

It will be impossible, however, to discuss the subject intelligently without inquiring, first, as to what the rights of the public are in a moral sense. It is presumable that our law makers, when framing a law, take the moral rights of the people into consideration, and endeavor to enact laws that will secure these rights, regardless of the few who may feel that they are being injured or imposed upon.

What then should be the rights of the people morally? First, they should have the right to say, through properly appointed officers, where public buildings should be located in order to secure the best sanitary conditions. These, of course, consist of sewerage, ventilation, light, heat, cleanliness, modes of ingress and egress; and there can be but little doubt that our Legislature intended that such powers should be vested in the State and local boards of health.

And, while it may be offered that the language of the sections which I shall take the liberty of quoting you presently is, perhaps, somewhat ambiguous, I believe it is an axiom in law that the legislative intent is to be considered in the construing of it, as well as the language itself.

The genesis of the law, in so far as the rights of the people under this government are concerned, is to be found in the Declaration of Independence, our magna charta of civil and religious liberty, and it declares in language too plain to be misconstrued, that all men are entitled to certain inalienable rights—life, liberty, and the pursuit of happiness.

Now if life is one of our inalienable rights under the declaration, the framers of that document must have meant and intended that that life should be physiological, or as near that condition as it is possible for man to obtain, else they would not have added "the pursuit of happiness," since healthy life is one of the requisites of happiness.

Assuming, therefore, that our interpretation of the language of the declaration is correct, we find that the rights of the people to protect themselves in a sanitary sense are clearly established, and that there can be no equivocation.

Indeed, he who constructs a public building in such a manner that those who occupy it from time to time, or who live in close proximity to it, are forced to breathe an atmosphere so poisoned that they are in danger of malaria, typhoid fever or diphtheria, not only restricts, but in fact deprives them of that which is their inalienable right—life. This, it is needless for me to say to an intelligent body like this, may be easily done, if the sewers, drains and plumbing are so constructed that siphons are formed, that cesspools are made instead of properly constructed traps, so that gases from the closets and sewers are carried into instead of out of the building.

It is equally important that the ventilation of such buildings receives the attention of proper authorities. It is true, with the electric light science has been throwing upon the question of ventilation, that there is at least the shadow of a doubt as to whether air that has been breathed a number of times is dangerous to life and health or not, but since it is proven beyond a peradventure of a doubt that contagious diseases are from two to three times more numerous in tenement houses where bad ventilation and bad sewerage exist, and where the environments are generally bad, it is safe for us to assume that these are important factors in the production of disease and consequent deaths, and are, therefore, well worth our most careful study and investigation.

No man in this presence, indeed, there is no intelligent or humane person anywhere but that will object most strenuously, and call in the aid of the law, if necessary, to prevent his neighbor from scattering in a reckless manner such deadly agents as strychnia, morphia, or other poisons, if his own or other people's children might come in contact with them.

For nearly a century it has been accepted as a truism that vitiated air is dangerous to health, and that the proper ventilation of living rooms, bedrooms and public buildings of all kinds, is an important sanitary measure, and therefore calls for the highest architectural and engineering skill, and the most careful and comprehensive legislative enactments.

With well grounded principles facing them on every hand, our legislators enacted the following statutes covering this subject, and with these we have to deal in this discussion. A careful examination of the several sections relating to the powers of State and local boards will, in our judgment, establish clearly the fact that their powers are almost without limit, and that they are untrue to themselves and recreant to their duties when they fail to examine carefully into the construction of public buildings, and insist that the sanitation of such structures be complete in the smallest detail.

Section 2116 of an act entitled "An act to amend and supplement certain sections of the Revised Statutes, relating to the powers and duties of the State and local boards of health," provides that the board may compel the owners, agents, assignees, occupants or tenants of any lot, property, building or structure, upon or in which any nuisance may be, to abate and remove the same. It further provides that said boards may regulate the location, construction, repair, use, emptying and cleaning of all water closets, privies, cesspools, sinks, plumbing, drains, yards, pens, stables or other places where offensive or dangerous substances or liquids are, or may accumulate.

You will observe that while the language of this section does not explicitly refer to public buildings, it is so general in its description that they are necessarily included for it says from any lot, building or structure, a nuisance may be abated, and even indicates the parties liable for the maintenance of the same. It seems clear to our mind that if the boards of health have power to abate a nuisance once found, it is also within the jurisdistion of the board to prevent the formation of the same.

This section further says that boards of health may regulate the location, construction, repair, use, emptying and cleaning of all water closets, privies, cesspools, sinks, plumbing, drains, yards, pens, etc., etc.

Now, while we do not claim that this section does grant absolute power, we feel assured that the intent of the law, and especially of other sections to which we will call your attention later on, is being so clearly indicated that their power is made absolute by the act of 1893.

This section, you will observe, declares distinctly that the board of health may regulate—what? The location and construction of all plumbing—not meaning, therefore, simply the plumbing in private buildings, but since it has failed to indicate the character of the buildings, it necessarily means buildings of a public as well as of a private character. It seems superfluous to add that the plumbing here spoken of must mean that of buildings, for the reason that work of that character is not done in open fields or lots.

Section 2122 says, "The board of health of any city, village or township may make such orders and regulations as it may deem necessary for its own government, for the public health, the prevention or restriction of disease," etc. We find here that any board of health may establish such orders and regulations as it may deem necessary for the prevention of disease. They have, therefore, the power to legislate in such a manner that the construction of a public building must be of such a character that its strength and sanitary condition are not such as to endanger life, or be conducive to the spread of disease.

Section 2128 declares that, "When any building, erection, excavation, premises, business matter or thing, or the sewerage, drainage, plumbing or ventilation thereof, is, in the opinion of the board of health, in a condition dangerous to life or health, and when any building or structure is occupied or rented for living or business purposes, and sanitary plumbing and sewerage are feasible and necessary, but neglected or refused, the board of health may declare the same a public nuisance, and may order the same to be removed, abated, suspended, altered, or otherwise improved or purified, by the owner, agent or other person or persons having control of the same or being responsible for the condition; and the refusal or neglect to obey such order shall be a misdemeanor, punishable as hereinafter provided"

The board may also, by its officers and employes, remove, abate, suspend, alter or otherwise improve or purify the same, and certify the cost and expense thereof to the county auditor, to be assessed against the property, and thereby made a lien upon the same and collected as other taxes.

This section is much more explicit, for it points out plainly the exact character of the building or thing—saying plainly: "*Any* building where the sewerage, drainage, plumbing or ventilation is in such a condition as to be dangerous to life or health."

It seems evident to us that, in the very inception of this enactment, the legislative intent is clearly indicated, and that it is proposed that boards of health shall have and are given power to regulate and control the sanitation of all public buildings, the first section apparently clearing the way for what eventually follows in the section just quoted.

It may possibly be urged that no power is given to interfere in the construction of a building, but it seems self-evident that a body of intelligent men would not place a destructive power in the hands of a man or body of men, without at the same time meaning that that same body should have also the constructive. Indeed we find but a single word in the entire section, which, in our judgment, limits in even the smallest degree, the almost absolute power of these bodies, and that is the word feasible, the language being, "Where sanitary plumbing and sewerage are feasible and necessary," and even this is largely shorn of its strength further on, for this language is used: "May order the same to be removed, abated or suspended." Here the feasibility of drainage, sewerage and ventilation was not considered, but the question which seemed paramount to all others was: "Is the building or thing, by reason of faulty construction and location, dangerous to life and health, and therefore a public nuisance? if so, remove or abate it.

Section 2 of the act establishing the State Board of Health declares "That the State Board of Health shall have supervision of all matters relating to the preservation of the life and health of the people of the State."

In the entire domain of sanitary science are the people of the State no less interested than in this special branch—the proper construction and sanitation of the public buildings of the State, and to the State Board of Health is given the power to delegate or transfer its powers to the local boards.

Regretting exceedingly that your worthy Secretary was not more fortunate in selecting some one more capable to open this discussion upon so important a subject, and especially where a point of law is involved, I leave the subject in your hands.

The Chair: The paper is now open for discussion. This is a very important subject, and one upon which I should like to hear considerable discussion.

Dr. Davidson, of Hilliards: Mr. Chairman, it occurs to my mind that it needs no discussion unless there is some lawyer present who is conversant with such matters. It might be proper to discuss the subject, but it seems to me that it has been discussed very thoroughly.

Mr. Purinton, of East Liverpool: Mr. Chairman, concerning this paper just read, I wish to state that our board at present time is in controversy which relates to this subject. It is quite likely that a judicial decision will be arrived at regarding it. We have a hotel in our city and the sewer passes the rear part of it. The hotel is not connected with the sewer but has been using a cesspool. The board passed a resolution declaring sewerage to be both feasible and necessary under that building, inasmuch as the cesspool has become filled up within four feet of the top—eighteen feet deep. The building is a frame structure of three stories and sides of brick, and the matter was declared a nuisance. There is also another point involved that I will call attention to. The point is here. The owner of the building resides outside of the State. The building is occupied by a tenant. Is that tenant, for failure to comply with our rules, liable to punishment by a fine, and imprisonment if necessary, or are our hands tied so far as he is concerned? There will be a judicial decision in the matter, because the parties interested are going to contest it. We are perfectly clear that we can clean this out, and as a matter of fact we have cleaned it out and filled it up. But what about the plumbing? We cleaned it out and filled it up, and have taken proper steps to certify the amount to the county auditor, and have it placed on the tax duplicate. Now comes the question of complying with the remainder of the notice, that they shall put in the plumbing. The landlord is out of the State, and the question is whether we can compel the tenant to put in sewer connections. We don't know that he is the agent. We want to make him do it if we can, and we are going to do it if we can.

Dr. Hoover, of Columbus: I believe I was accused of not having backbone. Now here is where I have backbone. If you want my opinion, worth what it may be, the proper thing is to put that in and make them pay for it. If you put in plumbing there you can make it just as expensive as you please, and the next fellow will not let you put it in for him.

Mr. R. S. Galleher, of Sycamore: Mr. Chairman, at the time the circular letter that was sent out by our worthy Secretary reached me, as health officer of Sycamore, we were in the midst of what I expected at that time to be important litigation, but since that time everything has blown over and at present is all quiet. We have one building there that has been complained of for some time. I speak particularly of the high school room. The building is not of the most modern construction. The room is about 28 by 30 feet, with a ceiling 13 or 14 feet high. The stove by which this room was heated was located in the center of the room. On either side of the stove within 23 inches I measured, the end of the seats stood within 23 inches of the stove. The stove is one of those large family stoves, somewhat higher than my head, and during the weather when it was necessary to have fires at all in the stove the heat became so disagreeable close to the stove that it was impossible for pupils to sit there. There were at that time 80 or 90 pupils in the room. The seats were somewhat similar to the ones we have in this room. Every seat in the room was occupied, and in addition to these chairs were put along the aisles. The ventilation of the room in the summer time was all right, from the fact that on south and north there were large windows which could be raised from the bottom and also from the top, making the ventilation in the summer time very good. But in the winter time, in order to have any fresh air in the room at all it was necessary to either raise or lower the windows on the side of the room either north or south. When that was done pupils sitting next to the window got cold, and they had to come up closer to the stove. In order to make the room comfortable back a distance from the stove it was necessary to have a pretty good fire, so that it kept the school in a continual commotion. Now, then, our school board at Sycamore had been spoken to concerning this matter a number of times during last winter. When school commenced this winter there was no chance made except instead of the seats running as they formerly did, across this way (indicating), they ran across this way (indicating). Now, school commenced, and the school board decided that they could not afford to make any change in the ventilation of the school room. We had three rooms that were about in that condition. The superintendent of the schools came to my office and

wanted to know of me what could be done in the matter. He said ther seems to be a question of law connected with this, and if this ventilation can be improved I think it ought to be done. I want you, as health officer, to look after it. Well, there was no question in my mind, because I had considered the matter, and I met the school board at their next meeting and laid this proposition before them, and that was that one of two things would happen, and that very quick, that those school rooms should be properly kept and ventilated or the school stopped. That was about what I said to them. I did not make any further explanation, because I well knew that they had been talking about the matter and had been considering it, and the only reason they could give me was that they had not money enough to do it with. We all well know the fact that a great many of the diseases of children are contracted in the school room, and we should, therefore, have the school rooms properly ventilated and heated, especially this time of the year; and it should be the duty of the school board, without any directions from anybody, to make a comfortable place for the children while they are there. They held another meeting the following week and decided that they would not do anything. They said they could not possibly do anything because they had no money to do anything with. They came to me and had a conference. They did not want any trouble about it. At this stage of the game I received the circular letter from the Secretary and the question popped into my head to submit it for discussion at this meeting. I began to get uneasy about it. I have a boy in school myself. He would come home feeling sick and said he could not study because he had to sit too close to the stove or window. Now, gentlemen, there was no question but that they could get money. They certainly could have made arrangements to purchase a furnace, and the parties could wait until they had money. I wanted them to go ahead and fix it. They refused to do so at that time, and I expected litigation with regard to the matter. But they appointed a committee at the next meeting of the board. They investigated some school rooms there that were heated by the means of furnaces, and finally decided to purchase furnaces and put them in, and did so, and have them in perfect working order, and a nicer ventilated room you never saw. The teachers in the school room have each come to me and returned their thanks for the step I took in the matter of securing proper ventilation and heating of these rooms. I was very much pleased with the paper read by Dr Ebright, because I believe that all public buildings should be looked after by boards of health.

The Chair: Are there any further remarks on this subject?

A Member: I move, Mr. Chairman, that we adjourn until after dinner. (Motion seconded and carried.)

The Chair: The convention will take a recess until 2 o'clock P. M., and it is desired that we shall promptly meet at that time.

SECOND SESSION.

THURSDAY, 2 P. M., *January* 24, 1895.

Dr. Byron Stanton, President of the State Board of Health, in introducing Governor McKinley, spoke as follows:

Sanitary organizations have always been cordially welcomed to the capital of our State, and we felt assured that we would be welcomed here, but our Governor has done us the honor to come to our meeting to say to us in words that we are welcomed and to extend to us a hospitable greeting. I have the honor and pleasure of presenting to you Governor McKinley. [Applause.]

Governor McKinley spoke as follows:

MR. PRESIDENT, AND GENTLEMEN OF THE CONVENTION: I am glad to meet the State Board of Health and members of the local boards of health, and to congratulate them upon the good work they have already accomplished, and upon the efforts they are making to do still better things for the health of the people of the State. They have resting upon them—all of you have resting upon you—the most difficult as well as the most delicate of duties. There can be no graver responsibility resting upon a public board than that which relates to the life and health of the people, and there is no better way of promoting the real welfare of the State than by promoting the health of the people. [Applause.] Public safety is the supreme law everywhere, and public health is indespensable to public safety. It is a source of great gratification to me, as I am sure it is to the people of the State at large, that we have a State Board, and back of that the local organizations, so able and active and vigilant, so thoroughly and scientifically equipped for preserving, as far as possiblee, the public health. The annual reports of the Ohio State Board show what a great work they are doing, and the interest in these respects is increasing from year to year. The statistics furnished are of the utmost value and importance, for they give to the health officer everywhere an experience to guide future action. We cannot, too strongly, gentlemen,—for I know something of the members—commend the State Board of Health. I have known of their work for now three years, have followed it with the closest interest and

concern, and know they have accomplished much for the public good and for the welfare of the State. The whole State knows of the efficiency of the able Secretary of the State Board of Health. The Board has met every exigency that has arisen, and have done much to prevent the introduction of contagious diseases in the State. Another thing the Board has done: They have succeeded in dispelling a great amount of popular prejudice against the work of the State and local boards of health, and they have won the confidence of the people and of the representatives of the people, and in doing that they have accomplished one great essential in the successful performance of any public trust. If they could have the earnest and active co-operation of the local boards, municipal and other public officers in every section of the State, they would still accomplish better results for the people, and I am glad to learn that that co-operation is greater now than ever before, and is all the time growing. We are making great progress in sanitary education in this country, and the school of instruction has only just begun. We have yet much to learn. The papers which have been written and presented by members of the State Board and scientific men everywhere, have done much to educate the masses in this most important field, and with this it is made easier for the State and local boards to advance in their reform. Frequent meetings by the State Board and national and local boards will have a tendency to promote progress in the line of sanitary instruction.

I am pleased, gentlemen, with this opportunity to be publicly associated with you in a work of such vast importance. I thank you for the good you have already accomplished, and to bespeak for you even more satisfactory results in the future. I shall cheerfully co-operate with you in your work and efforts in every possible and proper way to aid you in securing the best results from your important official trusts. I bid you welcome to the capital of the State, and trust your sessions will be profitable, as I am sure they will be interesting and agreeable. [Applause.]

Responding to the address of welcome by Governor McKinley, Dr. Stanton spoke as follows:

Allow me to thank your Excellency, in the name of this body, for the hearty welcome you have just accorded us. I am sure I speak the sentiments of all when I say that our pleasure is greatly augmented and we feel much encouraged by your presence, and by the expressions of your favor that have been given. On behalf of this meeting I gratefully thank you for this cordial greeting, and on behalf of the State Board of Health I especially thank you for your words of commendation of the work it has accomplished. We look forward to a useful and important meeting. We feel that it is good for us to be here. We have come for a common purpose—an interchange of thoughts and opinions, and for a fair and

impartial consideration of such subjects and measures as will tend to lengthen life, prevent disease or mitigate suffering. This is the fifth annual meeting of this sort, and their growing popularity has added greatly to our numbers from year to year. Good as have been the papers and discussions of preceding meetings, we indulge the hope that those of this year may be still better; that this organization may extend its usefulness by the thorough discussion of the practical questions that are set forth in the admirable program arranged by our worthy Secretary. I sincerely hope that this may be an occasion of great interest and profit.

As this is not a medical meeting, it may not be proper for us to consider here the immediate causes of the preventable diseases from a medical or bacteriological point of view, but there are remote or predisposing causes of great importance which, as they belong to preventive medicine, we may consider. Preventive medicine may be said to be of recent creation. The men who have given it its scientific character are men of the present age. Its domain is enlarging, and this has much to do with the fact that, within the last quarter of a century, in nearly all civilized countries the death rate has been lowered, the duration of life materially increased, and living freed from many of its pains and terrors, and it is believed that the time will come when many of the diseases now termed "preventable" will be extirpated. While some of the lowering of the death rate may be due to improvements in medicine and surgery, much of it is due to public sanitation, and this beneficent work is the chief glory of modern medicine.

The importance to the State, especially to villages and rural districts, of the law for the compulsory establishment of legally constituted local health authorities as a means of protecting life and health, is becoming more and more apparent. But little opposition to the law is now manifested. The law was in advance of public demand, but the criminal indifference and ignorance, which were formerly the worst enemies of sanitary science, have given place to a better state of affairs. The general public has been educated to the real value of this sanitary legislation. A few boards have been ignorant of their prerogatives, and declined to act, but the health laws have been pretty generally enforced, and it is hoped and believed that with increased experience, a greater uniformity of sanitary organization and a fuller registration of vital statistics throughout the State, interest will be added to the work and greater value given to our reports. The thorough organization of the sanitary authorities and health officers under the present law has resulted in much good, and not only are the laity being educated to the importance of sanitation, but in the medical professsion the great problems involved in the prevention of disease are being more studied, and our medical colleges are better educa-

ting their students in hygiene. The present era of medicine is preeminently distinguished as aiming rather to prevent than treat disease.

The State Board of Health has been industriously at work in the line of its duties. It has sought to awaken public attention to the danger of neglecting that cleanliness which is akin to godliness; it has collected, classified and distributed information looking to the conservation of public health, and has ever encouraged and co-operated with local boards in this interest; it has published and freely distributed among local boards and the people, circulars on the prevention of consumption, diphtheria, scarlet fever, typhoid fever and small-pox; it has collected and published the vital statistics from the different parts of the State; it has investigated local outbreaks of disease; the members of the Board and its Secretary have visited many places in the State to make investigations in regard to special causes of sickness, and to inspect new systems of water works or sewers; it has by committees, inspected several of the public buildings in regard to which complaints as to their sanitary condition have been received, and called attention to their defects and advised as to how they might be remedied. Wherever outbreaks of the more dangerous infectious diseases have occured, our Secretary or some member of the Board has gone to render the local authorities such assistance as was in his power to prevent the spread, and it is a matter of congratulation that the greater diffusion of knowledge in regard to the prevention of these diseases through the State, and especially those clothed with power in such matters, has rendered such visits less frequently necessary than in former years. Of some of these outbreaks special reports will be made during our meeting. The Board has endeavored, as far as has been in its power, to disseminate knowledge among the people upon matters relating to public, municipal and domiciliary hygiene through the *Monthly Sanitary Record*, the publication of which was kept up so long as the financial affairs of the Board would permit, but the reduction of our appropriation by the Legislature, from ill-judged motives of economy, compelled us to give up this important work, which we would be glad to resume if we were able so to do.

Statistics could be adduced to show that the kind of sanitary work done by the health organizations throughout the State yields a rich reward for the dollars and cents expended, but even if my time were not too limited to permit me to give such statistics, it would not be necessary here, for you are as well aware as I am of the fact that sanitary work is accomplishing its object in a way that yields a good profit in the preservation of life and health.

If, in carrying out the programe arranged for this meeting, we are able to disseminate useful knowledge, if we are able to bring out thoughts

and suggestions of a practical nature, which we may work out after going to our homes, our meeting will have yielded good fruit.

On behalf of this body I again thank your Excellency for the warmth of your welcome, a welcome which we hope not to abuse. We will not take the atmospheric temperature of this January day as an indication of the warmth in your heart. [Applause.]

The Chair: Gentlemen, the next subject for discussion is one proposed by the Board of Health of Bucyrus, namely, "The Best Means for the Prevention of Tuberculosis in Man and Animals," the discussion to be opened by Dr. D. N. Kinsman, Health Officer of Columbus.

Dr. Kinsman: Mr. President and Gentlemen of the Public Health Association of Ohio: Consumption, two hundred years ago, was believed to be contagious, and the first book written on consumption in the English language held that view. Morgagni said while young he feared the bodies of those dead from consumption, and when old he avoided them. There was no question as to the contagiousness of consumption until about the time that Sir Thomas Watson gave his lectures on the practice of medicine. The inocubility of consumption or of tubercles was demonstrated in 1865 by Villemin. In 1882 Koch discovered the bacillus known by his name. This he isolated, cultivated, and inoculated, and thus proved this bacillus, and this alone, was the cause of consumption. Before there were many factors supposed to enter into its cause, as poor food, bad air; in other words, physiological poverty or misery in the world, and without which consumption would be a thing of the past. These we know may prepare a soil on which the bacillus may grow, but without which bacillus consumption never exists. All warm-blooded animals are subject to tuberculosis. Some resist it better than others. Some, like the Gerbille, are able to resist it completely. Men have various degrees of resistance; some yield easily and some resist very strongly. Tuberculosis may be communicated by the process of respiration, digestion or by inoculation. This tuberculous material is produced in the lungs. It is spat out upon the ground, or upon the floors, or upon the walls of buildings. It becomes pulverized, and it is carried by the air. It is inhaled. It effects a lodgment in the lungs, and there it grows. This expectoration thrown out upon the ground has been known to be dried and wet, alternately for six weeks at a time, and yet the same material mingled with the dust of the street has been inoculated and proven fruitful at the end of this time. All our flesh-producing animals are subject to tuberculosis. The sheep is the most resistant of all, but it has been inoculated. Cattle feeding in the same manger where cattle have previously had tuberculosis and died, have become infected by inhalation of this tuberculous matter that was left by the former occupant of the manger adhering thereto. Animals, kittens fed upon the milk of tuber-

culous cows have become tuberculized. Dogs who have licked the sputum of their tuberculous master have become tuberculized and died. Calves fed upon tuberculosis matter from men and other animals have become infected. Fowls also have become infected by devouring tuberculous infected food. Having ascertained that the tubercle bacillus is the cause of consumption, that it is reproduced in persons who are affected with it, that the bacillus is spat out of the lungs of those persons who are infected, and that every person who is affected with tubercles is the focus for further infection, it is evident that hygienic measures will have much to do with the spread of this disease. How important this subject is, may be recognized by the fact that one-seventh to one-fifth of the entire mortality of any community is due to tuberculous diseases. How shall we prevent this? Every patient should be quarantined, not isolated; and they should be instructed to carry with them a receptacle that contains a disinfectant, into which all of their expectoration, charged with bacilli as it is, can be thrown. They should be instructed that they should not soil cloths with their sputum without burning them, or spit upon the floors of the rooms in which they reside. There should be a systematic inspection of all flesh that is used for food in order to prevent contamination by way of the digestive organs. That the spread of tuberculosis in the human race depends to no small extent upon infection by the milk of cows, may be readily inferred when we recall the statement of Fleming that the majority of cows above seven years of age are tuberculized. There ought to be specific legislation looking to the inspection of all our meat-producing animals.

The Chair: Gentlemen, we have now one of the most important subjects for discussion that will come before us. I think it would be profitable for us to thoroughly discuss it.

Dr. H. L True, of McConnelsville: I fully concur in Dr. Kinsman's remarks. I think I have observed cases of infection that might have been prevented had the people been informed. I wish to relate one that occurred in our town. A young lady came back from the West and stopped at her sister's in McConnelsville. There was no consumption in the family that they knew of before that, and she must have brought the infection with her. She lingered for some time and died. Her sister did not use the feather bed she lay on after that, but she put it away for another sister that was going to school at that time some place in Tennessee. After awhile that one came home, and got married, and her sister gave her the feather bed that the other one died on. She took that, and she slept on it one winter, and next spring she took the disease and died with it. I was called to see her, and called attention to that, and, as I mentioned it, the sister was satisfied that that was the way she got the disease. Now,

in Dr. Whittaker's practice, he stated that in Berlin attention was called to feather beds as a source of tuberculosis. They took the feathers out of a bed that a patient had died on, and sent them to the renovator and had them renovated by five different renovators in the usual way, and even after the feathers had been renovated they gave consumption to nearly every one who slept on them. Now, it seems to me, gentlemen, that the days of feather beds have about gone by, and I would like to have the State Board of Health say a word upon the subject.

Dr. Young, of Chicago Junction: About sixteen months ago I had in my care a young boy twenty years of age, who came home from school and was in very poor health. On examination it proved to be tuberculosis. Death ensued in a few months. There is no history of tuberculosis in the family on the father's or mother's side. To-day the father is dying with tuberculosis contracted from that case. The time he came into my care they were in the habit of spreading newspapers on the floor and allowing the young man to expectorate on the newspaper; of course, when he came under my care that was changed. I had them procure spittoons and use them. They were thoroughly disinfected, the expectoration being thoroughly cooked, but it was too late. The father is slowly dying of tuberculosis. The sisters broke down and were sent away. Whether the mother will escape it or not is a question. I am satisfied that it is contagious, consequently I have taken all precaution possible in the care of those afflicted with tuberculosis, and I am very anxious to have this matter discussed at great length, because I am deeply interested.

Mr. Hartzell, of Canton: I have never heard the subject more ably presented, it appears to me, than was done by Dr. Kinsman. I only regret that he did not go a step further and give us the results of the attempt that is being made by law to suppress tuberculosis among the cattle in the States of New York and Massachusetts. My impressions of this subject are derived mainly from reading agricultural papers Of course, there are many agricultural papers which lack information, and there are certain agricultural and other papers that are conducted upon a very high plane of intelligence, such as the *American Agriculturist*, and the continuous reading of these newspapers has impressed me with the fact that in undertaking the prevention of tuberculosis among cattle, we should adhere to the old Roman maxim—go slow. When the law was passed in 1893 in New York, the people entered upon this subject with great zeal and enthusiasm, and committees were appointed to make investigations. It is apparent from some of the reports that where there has been great destruction of cattle, there have been no cases of consumption at all. I am as much in favor of the law as Dr. Kinsman could be,

and I hope that in cases where it is necessary to kill cattle on account of tuberculosis, the farmers, when settlement is made, will be allowed a fair price in cash for their stock, instead of half price, as indicated in those states; thus obviating one of the great objections that would be in the way of those undertaking this great reform.

Prof. Nelson, of Delaware: We have left our homes and come to this place to listen to these papers. The question comes to my mind, what good are we to take to our several homes from these papers? Dr. Kinsman has very ably discussed the cause of tuberculosis. I suppose we will all agree that there is such a disease. We don't need any further light in that particular. He has shown us that the disease is due to the bacilli. I think we are all agreed there now. He has told us that the disease is communicated by the means of expectoration. We have agreed there, but how about the people in the several towns where we live—is it generally known—is it believed by the people of these towns, by the school children, by the boys and men on the street, that the disease is communicated by the disgusting habit of spitting? We are a nation of the greatest spitters in the world. You may walk up and down the streets of Paris for hours without seeing a man, certainly not a woman, expectorating on the street. You cannot go through an American town, at least any that I have been in, without seeing it practiced every five minutes. Now, gentlemen, I don't believe that we have been educated yet up to the point where we can check tuberculosis. It is all right to talk about working with the cattle. Let us begin there if we cannot begin anywhere else, for we must be doing something. I think it is greatly a matter of education. I think the matter should be brought up in every public school. I think that, as health officers, we should see to it that the teachers of the public schools where we live should talk upon this subject, that the children may be enlightened and instructed as to where the danger lies in this direction. It seems to me there are two or three other things that we should emphasize at the same time. I think we ought to emphasize one thing that Dr. Kinsman says, that consumption is not hereditary. I find this, that statistics show in cases of consumption that nine per cent. of such cases are rated in families where there is no trace of the disease. You may explain that nine per cent. by the fact that the sputa has been discharged around the house carelessly, and children and grown people have come in contact with it in such a way as to produce consumption. I think another thing right along there should be done, and that is our people should be convinced and taught that consumption can be cured, certainly if taken early enough. In hospital experience we find a good many subjects where there has been tuberclosis and the tubercules have been destroyed where the disease has found lodgment, and the disease has been

checked. And we all know of cases of people afflicted with tuberculosis who have gone west to Mexico and California, and have lived good sound lives after that. I am inclined to think we ought to have a health investigation of our families that are tuberculized. It seems to me that the time ought to arrive when the family physician, if not the health board, should take it upon himself to visit families and say, here is a child and from its constitution it is liable to this disease, and should be separated from the other children. You ought to put special limits on such cases. Now put on your precautionary measures in regard to school life, in regard to habits of dress, and in regard to diet. I have been delighted to read that one of our health officers in the United States, a physician in St. Louis, claims to have found a perfect cure. I am somewhat acquainted with the St Louis doctor, and he claims that he has discovered an anti-toxine that for consumption is as perfect as the anti-toxine for diphtheria. He has been working upon it for years. The same thing has been prepared in Paris and in Berlin. Of course it is too early to judge of this new remedy, but let us hope that success may come; there are two sides to this problem always. There is the individual side and the diseased side, and I think the individual side is more important. I want to build a house as nearly fireproof as possible within the limits of the means I have at my disposal. I want to give that house as good a chance as possible. At the same time I want the town where I live to have a good fire department. I want to build up just as good a constitution as I can for myself and all my friends, so that they will be prepared to withstand the disease. In addition to that, I want to stop the disease somewhere, so it will not come to my home or town. Two things are indispensable; we must begin at home, and we must begin with children. It must be a constant course of education. At the same time the doctors and health officers must do all they can to ward off the disease, to learn how to control it after it comes, and to learn how to cure it. I believe, then, that two lines of work are open to each one of us as we prosecute these labors in the various towns where we live.

Dr. Kinsman, have you faith in tuberculin as a diagnostic?

Dr. Kinsman: I have.

Prof. Nelson: Could not we introduce that into the practice in this State and thus ascertain to what extent our herds of cattle are afflicted?

Dr. Kinsman: I believe it can be done. We are using that in cases of inoculation to decide cases of glanders.

The Chair: The next subject for discussion is one proposed by the Board of Health of Weston: "Is the Dry Closet System to be Recommended for School Buildings?" the discussion to be opened by Dr. William T. Miller, member State Board of Health, Cleveland.

[Dr. Miller here discussed, without notes, the "dry closet" and other systems of disposing of excreta. The stenographer failed to report his remarks, and it has been necessary to omit this part of the discussion.—Editor.]

Dr. Clark, of Ashtabula: I have had the honor of being a member of the school board of our city since 1884, and within that time we have built three buildings and introduced the dry closet system, and I must say that it has given entire satisfaction. I am not speaking on the subject in a scientific way, but none of our teachers or pupils have ever complained of any smell about those buildings. We are entirely satisfied with that system.

A Member: Dr. Miller neglected to tell you concerning the air that is carried over the fecal matter for the purpose of discarding it through the ventilating flues. Sometimes this foul air in being discarded comes down the flue into the school room. I know of a school where this system is used where this was the case. In two or three instances I have known of persons in school who were made sick by this foul air. The flues do not always carry the air upward. In some cases it is almost impossible to prevent this, and I think it is sufficient to condemn any system of dry closets

Mr. Schachleiter, of Ironton: That is exactly the case with the Kingsbury building at Ironton. There are about 800 scholars there, and more or less of them are affected by this foul air in the building, and we are awaiting the result of this investigation to-day to see whether we can find out by the originator, or through some genius who is here, to tell us what to do with this system.

Dr. Miller, of Massillon: This whole matter resolves itself into the question whether a practically reliable draft can be maintained in a chimney or stack, the chimney or stack being constructed on the best principles and in the best manner known at the present time. The warming of houses, the running of machinery by steam, all systems of natural ventilation (whether connected with the air closet or not) are based on the affirmative answer which is given to this question by science as well as by experience. If facts justified a negative, the wheels of imperial industry would stop; in fact would never have started. If reliable ventilation can be obtained by means of a draft in a warm chimney, the air moving toward the stack will not be turned back by the necessity of passing over excreta. The air closet (or dry closet) is *one* of the methods by which we may hope to be able to safely dispose of human excreta. The safety of sewer connections and plumbing arrangements in our houses depends on the proper application of recognized scientific principles and the honesty and capability of the mechanic and the one who plans his work.

Is the water carriage disposal of excreta to be indiscriminately condemned because a large percentage of the plumbing now in the houses is faulty in principle or botched in the construction? The safe and inoffensive disposal of excreta by burning within the building depends on a correct application of the same principle, to-wit: That *warm air is lighter than cold air.* If this were not true, I suppose the earth would be uninhabitable. The same principle is invoked in successful and safe plumbing.

School children are probably the healthiest class in any community, and are not, probably, to an alarming extent, entertaining and throwing off disease germs. If they *are* each a laboratory for the manufacture of germs, however, are not these germs as likely to be cast off from unclean bodies, covered and lined with extensive excretory surfaces, in the school rooms as in the closets? The percentage of absent sick in buildings using the air closets and those using other systems would be interesting data for comparison, other conditions being as near equal as possible. I have observed this to a limited extent (personal observations are necessarily quite limited), and the comparison was not to the hurt of the air closet system. So far as known at present, I think, none of the three systems of disposal of excreta by earth, air or water, can claim to be practicably applicable in all cases. It becomes sanitarians to recommend such methods of disposal of excreta as shall be most feasible and effective and least offensive and hurtful under specific circumstances; when all this is done, the great question of the disposal of the waste products of civilization, without hurt or danger to health or life, will remain to confront the sanitarian so long as civilization and its admirable product, the sanitarian, shall continue to exist. In the meantime important business interests ought not to be imperiled by unripe statements made here in the supposed interests of sanitation.

A Member: We came here to get definite knowledge on these subjects, and if our State Secretary has some definite knowledge I think the convention would like to hear him.

Dr. Probst: I can only give you definite information in regard to buildings I have inspected where the dry closet system is in use. There are, undoubtedly, times when this system does not work properly. I was called to Carey a few months ago on account of an outbreak of diphtheria that had occurred in one of their school rooms. When I talked to the members of the school board about investigating the ventilation of the building, they thought it would be entirely unnecessary because they had had the dry closet system in use for the past eight years, and it has given entire satisfaction. They had had numerous committees to examine the school building in regard to heat and ventilation, and they had always reported favorably regarding the operation of the system. It happened,

however, to be an exceedingly windy day when I was there. We went through the building—the board of education, and health officer, and myself—testing the outlet and inlet registers in every room.

In all of the rooms, in one-half of the building, those on the leeward side, we found currents of air coming into the room through the foul air registers. At the same time currents of air were passing out of the room through the fresh air registers. The direction of air currents was shown by using long strips of tissue paper. It was interesting to see those strips blown into the room or pulled tightly against the registers when there were changes in the direction of the currents of air.

I have found these back currents of foul air in other school buildings where the dry closet system is in use. I have no knowledge of such conditions having been the cause of disease, but, on theoretical grounds, there is a possibility that this may occur. Typhoid fever has been caused by the escape of sewer air into dwelling houses. In this case we must suppose that typhoid fever stools have been thrown into the sewer, and that the typhoid germs, having been liberated by drying of the stools, were carried by air currents into the house. If this be possible—and there is good authority for it—it is also possible for germs of disease to be carried into school rooms by currents of air passing through the dry closets in the wrong direction.

Dr. Hopkins, of Ashtabula: I would like to ask Dr. Probst, then, why we use water closets if we get typhoid fever into our homes? I don't see but we may find fault and pick flaws with almost any system for the disposal of night soil. In my own city we have three of those systems in working order. If I thought they were a detriment to our people and children I should think we ought to get something better. The fact that we may get some smell from them is true. That I concede; but we also can get that from our sewers. From all kinds of water closets we get smells, and we can condemn them on that ground if it is detrimental to health. If we can say to our people, or to the inventor of the system, that we get the air contaminated a great deal more and a great deal oftener than we would in any other way, I think we should condemn it. If not, I don't believe in a wholesale condemnation of a thing that in the main works well. We feel as though we have been doing the best we could for our school children

Dr. Hoover: I have about come to the conclusion that water closets should not be an integral part of a house, whether it be a public or private building, unless it is constructed in such a way that there can be no possible opportunity for unpleasant smells to arise which would find their way into the living part of the house, or part that is occupied. I believe

that will be the solution of this question eventually. We have had different systems here in Columbus for heating the public buildings, and in a majority of instances they are satisfactory, but in a few instances they have failed. Now, whether it is the difference in construction, or whether they should all be alike, or what the difficulty is, it is hard to solve. In our Central High school here one of the systems is a failure, I am satisfied, because of ignorance in its management. And in one or two of the new buildings that we have constructed the systems have proven satisfactory, have had no trouble and no fault to find with their operation. I think, myself, the proper thing to do is to separate the closets from the building in such a way that it is utterly impossible that there should be anything obnoxious or dangerous to the building.

Dr. Miller, of Cleveland: I will say that fecal matter should be sterilized. You can do that by hot water or fire, but you can never do it by air at a temperature of sixty-five degrees. I don't care whether it goes out in the stack or back in the room. It contains the germs of disease.

THIRD SESSION.

THURSDAY, 7:30 P. M., *January* 24, 1895.

The Chair: Gentlemen, the first thing on the program is a paper on the subject, "The Disposal of Night Soil and Garbage at Warren," by Mr. William T. Fee, Mayor, and President of the Board of Health of Warren, O.:

THE DISPOSAL OF NIGHT SOIL AND GARBAGE AT WARREN.

By MR. WILLIAM T. FEE, Mayor and President of the Board of Health of Warren, O.

MR. PRESIDENT, MEMBERS OF THE STATE BOARD OF HEALTH AND GENTLEMEN: Your worthy Secretary has invited me to explain what disposition our city of Warren makes of her "night soil."

This has become a very serious problem, especially in cities of about or under ten thousand inhabitants. By hauling it to the "dump grounds" it soon accumulates and becomes a nuisance. Its disposition by chemicals or incineration in a crematory is, by reason of its expense, impracticable for the municipal economy of a community of our size. And, besides, it would then thereby be reduced to a worthless waste and lost as a fertilizer.

Being somewhat interested in this sanitary question, and we having given the subject some consideration, permit me to give, somewhat in detail, our "modus operandi," that a more intelligent understanding may be had of our solution of this problem.

Our board of health has prohibited the construction of any water closet without a permit from the board, and that they shall conform to one of three kinds, namely: First, those

connected with the public sewer; second, water-tight vaults built of stone or brick and cement, with an extension back, covered with a flag stone, so as to permit of emptying without disturbing the building or injuring the walls; third, water-tight drawers or receptacles in which daily use of dry earth, ashes, or air-slacked lime is required. The last two kinds of closets require frequent cleaning—the drawer system more often than the vaults.

We have a night soil contractor, employed by the year, to empty all vaults at a cost of nine cents per cubic foot, and ordinary sized drawers for one dollar each. This work is done mostly in the night time or very early morning.

The owner of a closet desiring the same cleaned, applies to the sanitary office, where, in a book for that purpose, is kept a record of the drawers and dimensions of all vaults in the city. The sanitary policeman gives the owner a check or slip from a stub-book of blanks, whereon is stated the name, street and number, the amount in vault or drawer, as the case may be, and the amount of money to be paid. The holder takes this check or slip to the bank, pays the amount required, the bank stamps the slip "paid," and drops it in a board of health metalic safety-box, with Yale lock—similar to government letter-box, only smaller—fastened in the bank or some convenient place. The contractor, who has a key to this box, goes to it and gets the slip. This slip indicates to him his order for work, and place where, and also the important fact that the cost of said work is deposited in the bank. At the end of each month the President of the Board of Health gives the contractor, in exchange for the month's slips, a check on said bank for the amount. The contractor has a large platform wagon, furnished by the board, upon which he carries the night soil, in well made, strong, oak barrels, with water-tight covers, fitted in rubber gaskets.

We have a dump-ground owned by the city, and under the control of the board, situated on the low lands that drain from and just outside of the city limits, containing about fifteen acres of land, to which the night soil is taken by the contractor. At the dump-ground our board had constructed two rectangular reservoirs or pits of earth. These reservoirs are 20 x 40 feet in dimensions, and made parallel to each other, with space enough between for a passageway. They are about three and one-half feet deep, side and end walls slanting, and made of the earth from the pits. Drain-tile are placed below the surface of the bottom, at a sufficient grade to carry off the surplus urine and water.

A narrow, long platform is built from the end of the pit, extending over the wall and down the center, for the purpose of aiding the unloading and dumping of the contents of the barrels from the wagon. Over each pit or reservoir is erected a board roof shed, gable ends, with sides boarded down far enough to give strength to the structure and prevent rain and snow from blowing in, and yet leaving open space sufficient to permit easy access to the pits and the passage of an abundance of air. These structures have been made of cheap, rough material, and been given a heavy coat of iron paint and oil. The total cost of the two structures, together with the pits, is about $250. The contractors are required to use air-slacked lime, or better, dry, pulverized earth, or both, on the night soil as soon as dumped. This serves the purpose of taking up the moisture, holding the gases and ammonia, and decomposing the night soil. By the time the second pit is nearly filled, the first pit, if properly drained of surplus water, and lime and loam has been liberally used, is composted and becomes a valuable fertilizer. The compost sells readily in the pits to farmers and gardeners at twenty-five cents per cubic yard. When the utility of this product becomes better known we expect to obtain better prices, as one of our farmer friends, who was first to use it, now wishes to contract for the entire product of the future. Those who have used it commend it for its lasting quality and great strength as a fertilizer. To obtain best results from its use it should be thinly spread over land and thoroughly mixed with the soil. Pulverized dry earth will completely decompose fecal matter, and without offense. This property of mother earth, by which dead organic matter is converted into inorganic matter, has long been known.

Research has shown that it is due to the germ life or the myriads of microbes which live in the soil and feed upon such matter. This germ life abounds almost exclusively in the upper layers of the soil. For this reason when a large amount of fecal matter is placed in a deep hole in the ground it is then below the level of germ action, where much of it remains a constant source of danger.

In our dry earth closets ashes are often used; but they do not contain the germ life which produces decomposition of organic matter, their action being simply mechanical—absorbing the moisture—not vital, as is the case with rich, loamy soil. Fecal matter deposited in the upper layers of the soil, or thoroughly mixed with it, is quickly decomposed and converted into food for plant life.

If the night soil is composted in the pits, and when removed well mixed with the soil and used on lands that drain from source of water supply, it seems there is little if any danger in point of health, or at least not more than would be from the use of many of the commercial fertilizers now on the market.

In this simple, systematic and inexpensive way we defecate our city, materially reduced our death rate, and making typhoid fever almost unknown in our midst, save and return to the soil a valuable fertilizer, receiving from which a considerable money return for what would otherwise be considered a waste and a nuisance.

We do not claim perfection for our system, but believe we have taken a long stride in advance of the poisonous pit of fecal putrefaction that is a dangerous source of contamination and constant menace to the health of any community.

The Chair: Gentlemen, this brings before us for discussion, the subject of disposal of night soil and garbage. We will be glad to hear from you upon the subject.

Dr. Probst: I simply want to thank Mr. Fee for presenting this paper on the disposal of night soil and garbage, and I can endorse it for even more than is claimed for it. The town is in perfect sanitary condition. They take care of their night soil in a way that any town of that size might do, and I think that we have had a most profitable paper read to us on that subject.

The Chair: Gentlemen, inasmuch as the next subject is similar in character to the one just discussed, how would it do to go on with the next subject? If you deem it advisable, I will call on Mr. W. B. Gerrish, city engineer of Oberlin, Ohio.

A Member: Mr. President, I move that that be done. I think it will save time and be profitable also, as the subjects are closely related to one another. (Motion seconded and carried.)

SEWAGE PURIFICATION AT OBERLIN.

By W. B. Gerrish, City Engineer, Oberlin.

Mr. President and Gentlemen: After the water works were built in Oberlin, in 1887, the people were constantly reminded that a sewerage system was a necessity. The question would arise: What shall we do with our sewage? There was no stream of water near the town. The only possible outlet was Plum creek, a stream which was dry during the summer months. If the sewage were turned into this stream it would become an elongated cesspool; a menace to the health of the farmers along its course, as well as a serious contamination of the water supply of Elyria, since that village draws

its supply from Black river, below the mouth of Plum creek. It was evident to all that if Oberlin was to have sewers it must purify its sewage. In the construction of its sewers the separate system was adopted, namely: No storm water is admitted to the sewers, and only the household waste is conveyed by them. Consequently we have nothing to purify except actual sewage, and the amount of this, of course, is not large.

Twenty acres of land were purchased a mile and a half from town, and a trunk sewer was given as small a grade as was safe, so as to deliver the sewage upon a farm as high as possible. We were able, however, to reach a point only ten feet above the bottom of the creek, with five acres of land below the grade of the sewer. The balance of the land was very much above this elevation. We studied all we could find on sewage purification by irrigation, but the cost as the irrigation fields were usually prepared, rather appalled us, so we began experimenting to see if we could not accomplish the desired results at less cost. The first thing done was to dig a small pit in the earth, and we were surprised to see how much of the solid matter was removed from the sewage by mere sedimentation. After passing through the pit the sewage was allowed to pass over the ground among the grass roots—the field was formerly a meadow—and the sewage was rendered very clear, about 70 per cent. of the total organic matter having been removed.

If a small pit and running the sewage through the grass would accomplish so much, surely allowing it to pass through the ground would accomplish much more. We then set about preparing the field, as shown on the blackboard, which I will explain later. Pits were dug four feet by twenty-five feet by three feet deep, and two and a half acres on the west side of the drive were underdrained by two and a half inch and four inch tile, three or four feet deep and twenty feet apart. This land has been divided into twelve areas by small ridges. A system of carrier ditches conveys the sewage to the different areas where the sewage enters distributing ditches; by overflowing the tops of these the sewage is spread upon the area. It then seeps through the soil to the drainage tile and thence flows to the creek. The areas on the upper part of the tract are larger because the soil is largely clay, while on the lower ground it is a sandy loam.

Colonel Waring, in his new work on "Modern Methods of Sewage Disposal," calls particular attention to the necessity of puddling the back filling in the trenches where the drainage tile have been laid. The book, however, was not published until after we had learned this fact by experience. Without puddling the trench the sewage will form rills through the soft earth and find its way to the tile without purification.

The land is seeded to alfala, Italian rye grass and common red clover. Thus far the Italian rye grass appears to be the best crop to seed with. Whatever the farm will produce is accepted with thanks, but the crops are placed secondary. The farm is intended for sewage disposal, and everything is made to bend to that end. The land on the east of the drive is used when cleaning the sludge pit on the west side. A little tiling has been laid here to drain a few low spots where the sewage was likely to settle and sour. The sewage is conveyed to different parts of this land by carrier ditches having a slight fall. Then by placing small dams at different points the land below is overflowed. No masonry was used on the work, the pit has no lining and neither have the ditches, and for many reasons they are much better with their earth sides. The total cost of preparing the land, tool house and necessary equipment was a little over $500.00.

The care of the farm consists in changing the flow each day from one area to another, and about once in a week or ten days the accumulated sludge in the pits is pumped into a tank on a wagon and hauled on the high ground, where it gives most astonishing growth to the grass. The grass and weeds around the bed are kept well trimmed and many little things done to give the farm a neat and tidy appearance. During the summer season a man was employed practically all the time at $7.50 per week. As before stated, a great deal of his time was occupied in improving the farm. Between 300 and 400 trees have been set out, and it is proposed to make it an attractive place. During the winter the man who changes the flow receives $3.00 per week. A team is hired one-half day when we clean sludge for $1.50. The farm has now been in

operation during both cold and hot weather and the residents in the neighborhood are satisfied with the way it is conducted. There is no order about the farm except directly over the sewage as it is spreading ought and right around the pit when cleaning sludge. It might be supposed that in the winter the frost would cause trouble, but you will remember that sewage is always warm. We never found it at Oberlin below 44 degrees Fahrenheit, and it will melt its way under the snow, leaving a crust of snow and ice supported on the tufts of grass, while the sewage will percolate through the soil as in the summer. A sewage farm will not care for itself, but requires intelligent oversight. The amount of work to be done at any one time in caring for the sewage is small, but that little must be done just at the time it is needed. The results, however, amply repay all the trouble, and the village is enabled to enjoy the advantages of a sewerage system without injury or detriment to its neighbors.

[The speaker then explained the methods of operation at the Oberlin sewage disposal plant, using the blackboard for the purpose of illustration.]

The Chair: Gentlemen, this brings before us the disposal of night soil and garbage and also the purification of sewage, which we will be glad to have discussed now. Have you any remarks?

Mr. Hartzell, of Canton: The subject of the pollution of streams, or rather of the prevention of the pollution of streams, is one that has always interested me greatly, and I have waited, and watched, and hoped these many years to read the details of a successful experiment such as we have heard this evening. My interest in this has been considerably stimulated by the fact that in Canton, where I live, we were compelled, before we built sewers, to provide for the disposal of the sewage. We were not allowed to do any taxing, or raise any money, until we had arranged to dispose of the sewage in a manner satisfactory to the farmers living below Canton. While we adopted a different system—a system of purification by a chemical process—it is apparent and is proven by this experiment that this is a cheaper plan, where it can be employed, and better adapted to a great many small places in need of sewage purification.

The engineer of Oberlin has shown us that this thing can be done. He has shown us how it can be done, and the result of doing it. And the paper by Mr. Fee, of Warren, shows us why it is that the sewage is purified by the upper layers of the soil. But because this is true, it must not be inferred that it is adapted to all towns, because there may be great differences. That is to say, suppose a commission was appointed that had full control over the cities in the State, and suppose that commission would say: Oberlin disposes of her sewage in this way, therefore this, that, and every other town, and any town coming under the supervision of it, must do it exactly in the same way. That would be an impossibility, because this is a very variable science, or application of science—the disposal of sewage. It is an art which calls to its help engineering and chemistry, and is really the application of science to the solution of

a great sanitary problem, and a great many things have to be taken into consideration. There is a difference in the outputs of towns. For instance, Oberlin has 40,000 or 50,000 per day, while Canton has a million gallons a day. One town may be on the lake and one on the Ohio river, on the border of the State where there is a divided control. One town may be situated so that the sewage reaches the field where it is to be drained, by gravity, and in another case it has to be pumped. There is, also, a financial problem; I found these things were to be considered when we were compelled to adopt some system for Canton. We had to grope in darkness, so far as our country was concerned, there being only one place where sewage was treated, viz., at Pullman, Illinois. But now there are many such disposal systems. I visited one at Farmington, near Boston, where the conditions are almost the same as at Oberlin, and there was no trouble from freezing, the warmer sewage running under the snow and ice, and undergoing purification as well as in summer. In Rhode Island I saw one place where sewage is disposed of by broad irrigation; in another place by intermittent filtration. All the sewage of Berlin, and nearly half the sewage of Paris is so treated—14,000 acres are used in that way. At Pullman, Illinois, the same experiment was tried, and a great deal was said about it years ago, but it has been abandoned for the last three or four years. At Worcester, Massachusetts, they undertook something of the same kind, but they now dispose of the sewage by chemical precipitation, as at Canton, in this State. So far as American experience goes, it would seem that places having, approximately, over about 500,000 gallons a day, have preferred to dispose of the same by chemical precipitation, that being better adapted to large quantities of sewage, whereas in smaller places they dispose of it as they do at Oberlin. In Canton we adopted chemical precipitation, and I believe, at any rate I hope, that inside of five years steps will be taken in many towns in the State of Ohio to introduce either one of these, or some other plan that will save our inland streams from pollution. The construction of water works and sewers has assumed large proportions. If these laudable enterprises are not supplemented by purification, there is danger that our natural streams will be converted into open sewers, especially in periods of low water. This is an important matter, and should be well weighed by every town which creates a sewage effluent; and viewed in this light the facts that have just been placed before us by Mr. Gerrish, demonstrating the success of the Oberlin experiment, should have a wide and careful hearing.

Dr. Bridinger, of Tiffin: I have sat here and listened to the matter of disposing of sewage. Of course all cities have a way to dispose of their sewage. Now then the thing occurred to me was, what is a city going to do when it cannot run sewage up hill? You cannot make water or

sewage run up hill. What are you going to do when a city is so constructed that you have to run the sewage into a stream, or else probably eight or ten miles in a stream before it could get on the farm? It would make it rather expensive to do that. I suppose there are some cities that are situated that way. Mansfield, for instance, can run sewage on a farm close by with little expense in the way proposed here. The way we are situated at Tiffin is, we have hills all around us, so that the sewage would have to go up hill in order to get on the farm, and consequently we have no place to put it except in the river. That is the difficulty there, and I would like to get some information with regard to the disposal of our sewage. During the winter time, and when there is plenty of water in the river, we have no trouble at all, and no complaint from the farmers below the city. We have thirty-five miles of sewers; our city is completely sewered. We flush out our sewers every two weeks, and rush everything in the river. Here is our difficulty. In the summer time, during the months of July and August especially, the river gets very low. We have our water works right above the city, and they hold the water back for the purpose of water power, and consequently in the daytime the water don't run down, and it gets so low that you can hardly float a newspaper. When it gets low it becomes very obnoxious and offensive, and people want to know what to do with it. I suggested a dam to be built of sufficient height to back up the water. Some proposed a channel, which would be very expensive, as the bottom is solid rock, and others claimed that the dam would fill up and would require great expense to build it.

Mr. Ghaster, of Fostoria: We find that we have reversed the Canton system of sewerage, or their *modus operandi*. In other words, we have built our sewerage system and now we want to dispose of our sewage. We have a small stream in which our sewage empties. We pump from a half to three-quarters of a million gallons of water per day. The mouth of the sewer is on a level, or, possibly, a few inches lower than the stream, and I would like to know how we could dispose of the sewage. The mouth of the sewer is below the city, and we don't feel that we are treating our farmer friends right below town to force this sewage upon them, as we have done for a year or more. We had members of the State Board of Health to visit us and examine into the matter, and plans were made by the city engineer which were elaborate. I believe the Secretary of the State Board of Health would bear us out in that; but nothing has been accomplished. Our board of health is solicitous that something should be done, and I would like to know the best system of disposing of this sewage. We are in a level country as well as our friend from Tiffin, who is a neighbor, and we are at a loss how to dispose of it.

Mr. Wickham, of Findlay: I am not the health officer from our city, but I see him here, and I guess he is too bashful to say anything. We have a system of sewage disposal that we are quite proud of. Our city, on the north side, is quite well sewered. This sewer empties down below the main part of the city. The south one empties close to the business part of the town, right in the main street. That is a nuisance; but to a certain extent we obviate this nuisance by not permitting water closets to be connected with the sewer. There may be a few that are, but it is the intention of the board of health to keep the water closets off of the sewer. Our night soil is gathered by scavengers and hauled to the crematory, at which place it is disposed of. All matter of that sort is hauled to the crematory and destroyed. All dead horses, cows, dogs and everything of that kind are taken to this crematory and destroyed. I hold here in my hand the report of 1892, which shows that in 1892 there were 4,089 cubic yards of common garbage burned, 5,541 barrels of night soil, eighty-five dead horses, 154 dead dogs, sixteen dead cows and four hogs were cremated. Nothing of the kind is permitted to lay upon the streets or permitted to be thrown out on the streets, but everything must be taken to this crematory and burned. Since we have had this crematory we have considerably reduced our death rate. I simply make this statement, gentlemen, to tell you what we are doing.

Dr. Whitmar, of Millersburg: A question in regard to this system of sewerage at Oberlin. It is said that the sewage is spread over a number of acres of ground; I would like to know whether that soil might not become saturated in that way, and how long it might last? It looks to me that by emptying a large amount of sewage on to flat ground, it would finally become saturated and become a sort of cesspool. If such would be the case it would be rather a serious matter, but I am satisfied that the system is a very good one and well adapted to a great many of our inland towns of the State, providing that will not become a stagnant pool in the course of time. If some of our chemists will show us that the vegetation will destroy that condition, we would probably be satisfied that it might be done for many years.

Mr. Gerrish, of Oberlin: You remember my saying that when the sewage goes down the water flows off in the drain-tile, and the air will follow it. The earth will then be full of air; of course, such a thing is possible as running on too much, but we don't depend on the vegetable or plant life to decompose the organic matter. It would take too long to go into details, however, about that.

Mr. Hartzell, of Canton: It is a hopeful sign when people are inquiring what they shall do to be saved in different parts of the State. Mr. Gerrish could tell you how it is done, but he is too modest. Get a first-

class engineer, if you have problems of this sort to solve—get a good one. [Laughter.]

The Chair: We will pass to the next subject, namely: "Report of the Diphtheria Epidemic at Ashtabula," by Dr. William T. Miller, member State Board of Health, Cleveland.

DIPHTHERIA EPIDEMIC AT ASHTABULA.

By Dr. William T. Miller, Member State Board of Health, Cleveland.

Mr. President and Gentlemen: On December 13, 1894, I received a telegram from Dr. Stanton, our President, notifying me of an epidemic of diphtheria at Ashtabula, and requesting me to visit that place immediately. I was tolerably familiar with the situation from a former experience with the same disease, which occurred there two years ago in an epidemic form, and also from the daily press reports, which indicated a grave situation. Appreciating the gravity of the condition, I procured the assistance of an expert in bacteriology, Professor William T. Howard, late associate and collaborator of Professor William Welch, of Johns Hopkins University, whose work in this special line received universal commendation at the Eighth International Congress of Hygiene, held at Buda Pesth last year.

Upon our arrival we met Mayor McKinnon, the board of health and the health officer, Dr. Hopkins. The conditions, as found, were as follows:

The disease had been somewhat prevalent throughout the year, in the first and sixth wards especially, thirty cases occurring, an average of two and eight-elevenths cases per month in the latter; fifty-seven cases, an average of five and two-elevenths per month in the former. These two wards constitute the harbor, separated from the main portion of the city by a distance of several miles, and populated by the ore handlers largely, whose habit of living favors the extension of contagious diseases. The cases reported for eleven months prior to December 1, in the different wards were as follows: In the third ward, four cases; in the fourth ward, eleven cases, and in the fifth ward, one case. From December 6 to the 9th, to the date of our arrival, on the 13th, inclusive, there had been reported in the second, third and fourth wards, fifty-six cases in forty-eight houses. This alarming condition had caused wide-spread fear among the people, and unusual activity on the part of the local authorities.

From a study of the situation, the board of health and Dr. Hopkins, the efficient health officer, decided that there must be a common source of infection, and that it was the milk supply to the infected families. Acting upon this opinion they ordered the discontinuance of the sale of milk for fifteen days, pending further examination. The history of the onset undoubtedly pointed to a common source of infection, fifty-six cases occurring in people of all ages, not intimately related by social or family ties or proximity of dwellings. The problem, as it was presented to my mind, was capable of study from several standpoints. First, the food and water supply. Second, the rapid extension of the disease by means of schools or public gatherings. The consideration of the first proposition immediately established the fact that the primary cases were all customers of one milk farm. The water supply of the infected families was from wells and the water works.

The question was next examined from the standpoint of extending by means of the public schools. An examination of the records demonstrated the fallacy of this position, for although it is conceded by the authorities that children are more prone to the disease,

the opposite condition obtained in this instance. The first three cases reported in each ward were as follows:

Second Ward.	Third Ward.	Fourth Ward.	Fifth Ward.
20 years.	13 years.	12 years.	25 years.
30 "	30 "	3 "	4 "
2 "	16 "	13 "	25 "

Giving an average of twenty-one years. Although this disposes of the idea of originating in the schools, I found several cases that could be traced to school companions eating an apple with a little girl who at the time complained of sore throat, and was afterwards treated for diphtheria.

The consideration of the different church and Sabbath school gatherings was nonproductive, the people being of a variety of faiths and religious habits. There were two gatherings of people by means of which the disease might have been communicated, but the authorities on this subject very much doubt if the disease can be transmitted by the air of the room. Grimm, a notion dealer, drew large crowds of people to his display of Christmas toys, by giving each child a present. The people also attended *en masse* an entertainment known as the Swiss Village, but it is doubtful whether such an extensive contagion could be propagated by means of the atmosphere. The clinical evidence was all in favor of the extension of the disease by means of contaminated milk.

The history of the Henry Smith (the milkman) case, is as follows, as given by Dr. Hopkins. He felt ill on December 1, with pains in the throat, neck and limbs, with difficulty in swallowing, but did not consult a physician other than to obtain a sidewalk prescription from a doctor for quinine and whisky. He sold milk on December 2, 3, 4 and 5; on the 6th and 7th he felt indisposed and remained at home, but not in the house. On the 8th he resumed his route again, and on the 9th, by an order from the health board, he was removed from his wagon, being replaced by another man who sold the milk on the 9th, 10th and 11th, when the health board ordered the sale discontinued for fifteen days. The milk was sold from ten-gallon cans, and long-handled dippers were used for measuring. The cases all occurred on Smith's route, although there were four other men selling milk in the same ward, no diphtheria having occurred on any route other than Smith's. A thorough investigation of the Smith farm was made by Professor Howard, Dr. Hopkins and myself. The cows were well housed and fed, and in excellent condition, as shown by examination of nose, tongue, throat and joints. Everything evidenced great care and cleanliness in and about the dairy; the cans, buckets, pans, etc., being exceptionally clean, as were also the house and people. Professor Howard made cultures from the nose and throat of Henry Smith, noses and throats of the cows, cans, bell and handle, cash box, tickets, milk, butter and water. Cultures were also made from the throats of two patients.

At a meeting of the board of health in the evening, Dr. Hopkins reported that the board had closed the schools and churches, and placed a rigid quarantine against the infected houses, preventing any one from leaving the house without a permit from the health officer; had ordered that no mail should be received from the infected houses, and had given explicit orders as to the sanitary care of the patients with reference to isolation and clothing. The board, at the solicitation of many citizens, ordered a stock of anti-toxine, and Professor Howard kindly offered to superintend its use. He reports very favorably, and will be pleased to give the results in detail to the State Board. He also offered to make cultures from the throats of the new cases, and also the cases before their discharge from quarantine. This offer was accepted, and no case was discharged from quarantine until bacteriological examination showed that there were no Lœffler's bacilli present. Professor Howard's report of the examination of the various cultures made at the Smith farm was negative, there being no Lœffler bacilli present. Large colonies were present, however, in the two cultures obtained from the diphtheria patients.

The examination of Henry Smith's nose occurred thirteen days after the disease was manifest.

Receiving notice on December 20, that the towns of Warren, Kingsville, North Sheffield, Andover, Jefferson, Perry, Conneaut and Geneva had declared quarantine against Ashtabula, I called a conference of the health officers of these towns to meet at Ashtabula on the 22d, to consider the situation. Drs. Merriam, of Conneaut, and Tibbets, of Geneva, were present. The situations were discussed, showing the thoroughness of the quarantine, and the limitation of the disease to the primary centers of infection. It was the opinion of those present that the situation did not warrant the declaration of quarantine. Letters were sent to the health officers, with a request that the quarantine be removed. The request was cheerfully complied with, with the exception of Warren.

The number of cases occurring in the second, third, fourth and fifth wards, the epidemic area, during the month of December, was as follows:

Number of cases in males	48
" " females	51
" " sex not given	1
Total number of cases	100

Number quarantines December, 1894, 51.

Deaths—Adults, males	2;	Females 3;	Total 5
" Children, "	13;	" 4;	" 17
" One baby, sex not obtained			1
Total deaths			23

Number of deaths, males	15	Number of cases, males	48
" " females	7	" " females	51
		Babe, sex not obtained	1
Total deaths	22		
		Total number of cases	100

Total number cases over 21 years of age	32	Deaths	5
" " 18 years to 21 years	12	"	2
" " 15 " 18 "	11	"	2
" " 12 " 15 "	7	"	2
" " 10 " 12 "	6	"	none.
" " 6 " 10 "	14	"	7
" " over 1 and under 6 years	17	"	4
" " under 1 year	1	"	1
Totals	100		23

Death in males	31 1-4 per cent.
" females	13 7-10 "

The total number of cases for the year was 216; deaths 41, quarantines 119. The same ratio of cases and deaths, according to population, would be: Columbus, 2,160 cases, deaths 410; Cincinnati, 8,000 cases,deaths 1,517; Cleveland, 6,480 cases, deaths 1,230. This accounts for the great business depression, estimated by a conservative business man as a shrinkage of $225,000 in the general volume of business of the year.

The question as to the cause of the epidemic is yet an open one, although the clinical evidence is against the Smith milk; the positive evidence, the presence of a specific germ, could not at that late day be determined. Kline claimed at Buda Pesth that when cows were inoculated with Loefler bacillus, the milk would contain the germ. Abbott, in experiments made a year later, disproves the claim. There is no authority for opinion that milk from the cows contains the germ, but of course milk would form a rich culture medium for genus accidentally added, and such milk would prove a fertile source of in-

fection. It is believed that Henry Smith had the diphtheria, infected the milk, and caused the almost simultaneous appearance of the disease in forty-eight different houses.

With reference to duration of quarantine, I think the examination of Dr. Biggs, which shows the variable length of time before the disappearance of the germ, demonstrates that no person should be dismissed from quarantine until the bacteriological examination of the throat and nose shows the part free from germs. I would recommend to the State Board the establishment of a number of distinct stations where bacteriological examinations of diseased conditions could be made. This would not only make a diagnosis positive, but also quarantine effective. I would also recommend the change of the section providing for the declaration of quarantine by one town against another, which should read as follows:

"That the local board of health may, with the advice and consent of a representative of the State Board of Health, order and declare," etc.

Although the epidemic is over, the fact that there are always cases of diphtheria in Ashtabula is a constant menace to the health of the community, and all the energy and wisdom of her very efficient mayor, health board and health officer should be directed to stamping out every vestige of the disease. This can only be accomplished by the authorities assuming charge of the infected premises, cleansing, boiling or burning everything that has been in the infected room.

Dr. Hopkins, of Ashtabula: In the investigation of the recent epidemic of diphtheria in our city, which has been very nicely stated by Dr. Miller, we found matters just as stated by him. These one hundred cases reported to us received their infection primarily from the milk, or from others in the home. We found, also, that all the quarantines that were put up for these one hundred cases should have been put up as soon as the 10th of the month. I don't mean to say that we neglected doing our duty, but we found afterwards that we would get cases as late as the 12th and 13th, possibly the 15th, of the month, in new homes. I questioned them to find out whether persons in these quarantined houses had been visiting other homes, and from the bacteriological examination I found what had been called sore throat at the first, and should have been quarantined, ultimately resulting in diphtheria. In two or three instances we found that mothers who had been in the habit of drinking this milk had sore throats at first, but thought it was just simply sore throat, and were running about the house and doing their work, and did not have a physician at all; but when we went there and examined their throats we found the bacilli there, and we were satisfied they had the disease. It has been very interesting to one who can look back upon it now. It was not interesting, however, at the time, I assure you, because it was too much of a serious matter to me. One mother had a grown up daughter sixteen or seventeen years old. She had a husband who did not like milk. She did, and had all she wanted. She was one of the first cases Dr. Howard examined. We found her throat to be in a very serious condition. Now, we got no anti-toxine until we had been up there ten days or two weeks, so that none of these cases were treated with anti-toxine; but speaking of another case where a father and two children were fond of milk and were

fond of bread and milk. He left for New York State, but got a telegram saying his two boys were down sick with diphtheria, and when he reached home he also complained of sore throat, and had the diphtheria. The mother and her mother drank no milk, and although they were exposed to the disease, did not catch it. I can mention other cases where persons no doubt contracted the disease from this milk. There is no doubt in our minds that this man's milk was at the bottom of the whole trouble.

I want to say that Professor Howard is here with us. He aided us materially in this epidemic of diphtheria, and I want to thank him most heartily myself for his aid. I believe he has got something here to-night that would interest you and be a benefit to you. I asked him as a favor to come, because our board of health had delegated me to see to the handling of it—the use of anti-toxine, which I asked him as a favor to superintend, and I call upon Professor Howard to talk to you awhile.

Professor Howard, of Cleveland: Mr. President and Gentlemen: I hardly expected to be called on to do anything this evening, but I will be glad to relate to you my experience at Ashtabula if you think it will be of value to others. It was a matter in which I was very much interested. As Dr. Miller told you, I went there on December 13, on his invitation, to investigate the epidemic purely as a matter of interest. After I got there I became actively engaged in the work and spent three weeks of my time there.

Now, as to the spread of diphtheria in this case, there is little doubt in my mind that Henry Smith, the milk peddler, infected his milk and was the cause of the whole epidemic, and the way that he probably did it is also very interesting to you as health officers. There is no escape from a clinical study of the epidemic from the fact that Henry Smith infected this milk. Although careful bacteriological examinations failed to show bacilli in his throat or nose that does not at all detract from the probability that diphtheria bacilli had been present. The only thing that keeps it from being a certainty is that we failed to find the bacilli. It is well-known to those who study and make cultures from cases of diphtheria that the diphtheria bacillus often disappears from the throat in a very few days. On the other hand, in other cases it remains quite a number of days, and in one case that I know of, seven weeks after the disappearance of the false membrane. In most of the cities and towns in Ohio, I am informed, the milk peddlers dip milk with a long dipper from the large milk can, and instead of obtaining milk from these cans by means of a faucet, they dip it up with long-handled dippers. The probabilities are in favor of the fact that Henry Smith frequently had diphtheria bacilli on his hands, and every time he splashed this dipper in the can the milk in the can was infected from it. I think there is little doubt that

this epidemic of diphtheria was caused by milk infection in this manner. The extreme rarity of milk epidemics of diphtheria makes this one peculiarly interesting from the epidemiological standpoint.

Now, as regards treatment with anti-toxine. That is one thing that chiefly interests us. On the 17th of December, Dr. Hopkins procured some anti-toxine from New York. There was in the town at that time three cases which were said to be of the most malignant form. These were the most malignant cases I saw while I was there. Out of these three cases, two died. The first case was a child six years of age. After anti-toxine was administered he lived two days, and I have no doubt that, while it was a severe case, anti-toxine prolonged his life. The second case was very severe—a woman twenty-seven years of age, who had been sick for six days. She was attended by Dr. Flower. He was so much impressed with the gravity of the case that he called in another physician with a view of getting his opinion. The physician agreed with him, and they thought the woman could not possibly recover. That was three days before I saw her—on the 17th of December. We gave her two injections of anti-toxine that day, and on each of the four succeeding days we gave her one injection of anti-toxine. On the morning of the fifth day after the first dose of anti-toxine she appeared better than at any time during her illness; certainly better than at any time I had seen her. Her pulse was good and strong and the heart sounds quite strong. The false membrane had entirely disappeared from her throat and she looked quite well. Suddenly, late in the afternoon, we called to see her, and found her gasping for breath, pulseless at the wrist, the heart sounds scarcely audible, and her lungs soon clogged up and she died in a short time. That was the second fatal case, although I have no doubt that her life was prolonged several days by anti-toxine. The third case was a child four months old. I saw it on the third day of the disease. This child had lost its father and grandmother of diphtheria. The child's temperature was 105, and the third day after anti-toxine was administered the membrane disappeared. This was a severe case of "mixed infection," and the child probably recovered from the diphtheria and died of septicæmia.

Now, these were all the deaths we had in cases we treated with anti-toxine. Twenty-eight cases received the anti-toxine treatment, and out of this number three died, which was, of course, very much less than 24 4 per cent., which had characterized the epidemic before that. Since I have rendered my report to Dr. Hopkins there have been six other cases at Ashtabula that I learned of since which were treated with anti-toxine; so the last six cases, added to the twenty-eight that I previously mentioned, makes thirty-four cases, with only three deaths. So that brings down

the mortality of the anti-toxine cases to 8.82 per cent. Of the twenty-eight cases, of which I have notes, treated with anti-toxine, five were mild cases. There were ten severe cases—and seven cases being very severe—a question of almost life or death, and at any time during the illness very severe cases. Now, the amount of anti-toxine given varied, according to the case. We used it as we would any other remedy, as the condition of the patient seemed to require. We gave ordinary doses on the first day, and the second day we repeated it. If the case was a severe or malignant one we would give a strong initial dose and would return in a few hours to see how the case was getting along.

It would be of interest, if time permitted, to say a few words about the different varieties of anti-toxine that are on the market, and which, I am glad to say, can be obtained now by physicians for the treatment of their cases. The anti-toxine used at Ashtabula was obtained by Dr. Hopkins from the Pasteur Institute of New York City. In our hands it proved satisfactory, the patients reacting typically. We usually injected it into the soft tissues of the buttocks. The patient rarely complained of pain, and we have had no abscesses following the injections, though we have had several cases of luticoria. I am inclined to think that eventually anti-toxine will absolutely cure a large portion of cases of this disease if administered at the proper time. It is beyond the experimental stage, but many thousands of cases must be studied before its exact value is determined.

Dr. Linden, of Brooklyn: While the papers have been very interesting and the discussions have been interesting, especially from a medical standpoint, still, we should not lose sight of a preventive treatment for this disease. These troubles, I think, in these cases, could have been avoided by boiling this milk. If the milk had been thoroughly boiled these people would certainly never have had diphtheria. I believe the representatives of boards of health should caution the people in their communities to be more careful in the preparation of their food. Inasmuch as these epidemics occur not only in Ashtabula, but in other places, it would be well for us to warn the people against the danger of milk infection and other food supplies. The milk should be thoroughly boiled, especially during a time an epidemic is threatened. I think we should take every means possible to prevent these diseases, and not wait until the disease comes and then try to procure some remedy which will cure. I say that prevention is worth a good deal more than cure.

Dr. Sutton, of Zanesville: Mr. Chairman, I wish to say that a few months ago a physician reported a case of diphtheria to me and he stated that it was a very malignant case; that he had no idea where it had come from, there being no cases of the sort there in the neighborhood, so I went

right to the house myself and put a card on it. When I went to record the case I saw the last case was recorded eight months before, because I attended it myself, it being right across the street; and I remembered having seen some changes made about the place where I had attended this case of diphtheria, and I drove back up there and went into the house and asked if they had been having some buildings moved or torn down, and the lady of the house informed me that last week—the week before—they had their vault cleaned. Thereupon I went and saw the man who had cleaned the vault and asked him if there had been any children around there when his men were doing this work, and he said that this little boy was there and they could not keep him away. He said he was in the way all the time. That is the history of the case. There can be no doubt of the way he caught the disease.

Mr. Walton, of New Burlington: I simply want to say that I am very thankful for the instruction and information that our physicians have given us, and I believe that a little warning to the doctors might not be out of place. I have had a remarkable experience with diphtheria myself. In 1869 I had three interesting little children. One of them was a little indisposed, and we called in a physician. He thought there was but very little the matter with the child, but in a day or two diphtheria in a malignant form developed, and inside of nine days our house was left childless. We knew of no way the children could have gotten the diphtheria but by being carried by the physician. None of us were so afraid at that time of this disease. Subsequently we learned that this physician had been attending a malignant case of diphtheria, and there seemed to be no other way by which they could get it except by being carried in his clothing. So, while I feel that our physicians have the interest of the sick in their hearts in this matter, I think the experience which I have related might be a caution to some who have not had experience with diphtheria.

FOURTH SESSION.

FRIDAY, 9 A. M., *January* 25, 1895.

The Chair: In the absence of Dr. Woods, the first subject we will discuss this morning will be, "What Precautions are Necessary in the Burial or Transportation of a Corpse When Death was Caused by Typhoid Fever?" The discussion will be opened by Dr. S. P. Wise, member of the State Board of Health, Millersburg.

WHAT PRECAUTIONS ARE NECESSARY IN THE BURIAL OR TRANSPORTATION OF A BODY WHEN DEATH WAS CAUSED BY TYPHOID FEVER?

By Dr. S. P. Wise, Member State Board of Health, Millersburg.

In estimating the danger of contracting disease from dead bodies we have but very limited data from which to draw our conclusions. It seems that bacteriologists have not proceeded very far in the direction of ascertaining the virulency of specific germs contained in the bodies of persons who have died of acute infectious diseases. So far our knowledge is limited to a few stray facts which have been incidentally discovered in the course of investigation of epidemics. There is, no doubt, a large unexplored field before us which will yield valuable knowledge whenever the subject is brought fully under the light of scientific research. We know from practical experience the extreme danger of contracting small-pox from the bodies of persons who have died of that loathsome disease. Even after having been buried many years the malady has been communicated to the living where such bodies were exhumed. We also have many authenticated instances on record in which persons who came in close contact with the bodies of those who died of scarlet fever and diphtheria have contracted those diseases. These facts have all been practically demonstrated, and there is no doubt concerning them. In the management of cholera epidemics the rule is universally adopted and strictly enforced that the cholera dead shall be promptly disinfected and speedily buried, with all the possible precautions. I apprehend that the transportation of the body of a victim of cholera would be considered absolutely criminal by all sanitary authority, and yet there is no scientific proof that the disease can be communicated by a dead body. The only medium of communication is, in fact, the clothing and bedding of the patient which have been soiled with choleraic discharges.

Now, when we come to consider the question of post-mortem transmission of the specific contagion of any of the infectious diseases from a scientific standpoint we are at once confronted by the question, How long will the germs of disease survive in the body after death? Will they retain their virulency for any length of time after decomposition has begun? Unfortunately we have no knowledge on this point with regard to typhoid fever, for the reason that the disease cannot be produced in the lower animals. We are therefore obliged to form our conclusions by analogy. The comma bacillus of cholera infests the intestinal tract; so, also, does the bacillus of typhoid fever. In either case it is necessary that the specific germ gains access to the intestinal canal in order to produce the characteristic disease. It is, of course, clearly demonstrated that it is not the germs themselves that produce the toxic effects, but it is the ptomaine or poison which they secrete. In other words, it is not the fly which does the mischief, but it is the "speck." There is another point of similarity between the two diseases; that is, that the contagious principle is contained in the bowel discharges in the most active form in typhoid fever, as well as in cholera. We see, then, that cholera may be fairly taken as an analogue of typhoid fever in so far as the parts affected are concerned. They differ widely, however, in the nature and malignancy of the germs which produce them. The cholera bacillus is by far more malignant than is the bacillus of typhoid fever, and we would naturally suppose that it would retain its potency for a longer period of time in the cadaver. Dr. Vincent Richards, of India, made some experiments which throw light on this question. He removed the contents from the bowels of persons who had died of cholera and administered them to pigs. He found that the animals died in a few hours with cholera, providing the fluids were taken from the corpse of a patient who had died quite recently—within two hours. But where a longer time had elapsed and the fluids were in the least offensive, the animals remained unaffected. These experiments prove conclusively that decomposition will destroy the cholera poison quite promptly and effectually. In view of these facts, we are justified in the conclusion that the same result takes place in the bodies of persons who have died of typhoid fever. This would

especially seem reasonable when we consider that the typhoid germ is far less virulent than the cholera germ, and would in all probability be less resistant to the action of the bacteria of decomposition.

It would appear, then, that there are no scientific reasons why the cholera dead should not be transported without extra precautions, no more than there are in the case of typhoid fever. In either disease the contagious principle is contained within the alimentary canal, and in a few hours after death it is rendered inert by the process of decomposition. Moreover, there is no doubt that many thousands of autopsies have been held on the bodies of persons who have died of typhoid fever and cholera, and yet we never hear of a physician who has contracted either disease in that manner. The reason is simply because the autopsies are held after the process of decomposition has accomplished its work.

The rule that should guide us, however, in all sanitary questions of this character, is *that we should always err on the side of absolute safety.* As I stated in the beginning, we have a great deal to learn yet on this subject. When life becomes extinct—no matter from whatever cause—the human body becomes a decomposing mass of organic matter. In the process of decomposition, ptomaines are generated which, in their effects on the living organism, resemble the venom of the most poisonous reptile known to mankind. We can well imagine that the affluvia arising from a corpse may contain poisonous elements which are highly dangerous to health. It is therefore nothing more than good sanitation that every possible precaution be taken to prevent the diffusion of those gases, even if it cannot be proven that they contain the elements of contagious diseases. I would therefore insist that all bodies, no matter what the cause of death may have been, should be hermetically sealed before they are accepted for transportation by any common carrier. I would urge the adoption of this rule for æsthetic reasons, in the name of good sanitation and common decency.

For instance, let us take a view of the conditions which often necessarily arise in the average express car while a corpse is en route to its destination. Here is the box containing the body placed on the floor of the car. On top of the box, piled up to the ceiling, are crates of strawberries or boxes containing oranges or other fruit. By the side of the rough coffin, nestled closely up to it, rests a dainty little basket containing some choice rolls of butter which some kind country matron is sending to her city friend. Perhaps on the other side, setting on edge leaning against the box, we find a large Swiss cheese. Now, I beg leave to ask, who would want to partake of those eatables if they knew the circumstances attending their transportation? The mere thought of such a condition of things would create a disgust in the mind of the average person, even if they knew that no perceptible odor had escaped from the corpse. I do know, however, and I think every express messenger will bear me out in the assertion, that in the majority of shipments there is more or less odor, and oftentimes it amounts to an actual stench if the containers are not hermetically sealed.

As regards the burial of persons who have died of typhoid fever, the same conclusions heretofore mentioned are applicable as far as the direct contagion from the body itself is concerned, but a different class of conditions are present at funerals which deserve special consideration. Without entering into a scientific discussion of the subject, I would briefly say that we have no positive assurance that the typhoid germ may not be found floating in the air of the room in which the patient was sick, especially where the necessary precautions of absolute cleanliness and the disinfection of stools have not been strictly observed. The bedding and clothing of the patient, and other fabrics contained in the apartment, may harbor the contagion. There is no reason why this may not be the case in typhoid fever as well as in cholera. Therefore the corpse and the sick room should be subject to the same sanitary measures that apply to all other contagious diseases. In order to insure absolute safety, persons would do well not to eat or drink in a house where the disease has recently prevailed, especially where the same members of the family who have nursed the sick also engage in the preparation of the meals. The reprehensible custom which is still in vogue in some of the rural districts of holding a

feast at the home of the deceased, to which neighbors and friends are invited, should therefore be abolished.

Dr. Hopkins, of Ashtabula: I am somewhat interested in this matter. I have been a little anxious to have this matter of contagious diseases brought before us and to discuss the methods of handling them in a way to protect our people. Now, if there is danger of funerals at a house, why, of course, we find that same danger to a certain degree in some other places, because we have not gone through certain processes of disinfection for protection. If we should allow that, would we allow a scarlet fever case, after we had thoroughly disinfected the body, to be carried to a church? If there is an element of danger, I am like the speaker—I believe in going cautiously. If there is any element of danger, let us not have any such funerals. I do not mean to say that we should not have any funerals, but I think in cases of contagious diseases funerals should be prohibited.

During the diphtheria epidemic at Ashtabula we buried many a little child inside of six to eight hours, and no one went to the funeral—none from the house went to the funeral.

Now, as to the transportation of bodies. I got into a little trouble myself in transporting one of these little bodies to Cleveland. I did not think at the time that I had endangered anybody, and don't think so now; but I found out before that body got to Cleveland that I had transgressed the laws of our State Board of Health, though the body was disinfected thoroughly and wrapped in a sheet wet with bi-chloride solution and the casket hermetically sealed. I thought I would bring that matter up before our meeting.

Mr. Ranney, of Columbus: If there is no danger of diphtheria, scarlet fever or typhoid fever to parties who may attend funerals, from the dead body, it seems to me there is danger from another source; that is, the apparel worn by the members of the family where this disease existed may become infected. I can see very readily how the health of those may be impaired who have not even been near the house. Therefore I should be opposed to public funerals where death has been caused by contagious diseases.

Dr. Wise, of Millersburg: I would like to have heard more expression on this subject in reference to transportation of those dying with contagious diseases, and it seems to me it would be well, as I stated in my paper, to be on the side of safety. I believe that public funerals ought to be discarded.

The Chair: Our next topic for discussion will be, "When Smallpox Alights in a Village, Then What? The discussion will be opened by Dr. J. T. Woods, health officer, Toledo.

WHEN SMALL-POX ALIGHTS IN A VILLAGE, THEN WHAT?

By Dr J. T. Woods, Health Officer, Toledo.

This query presents such a variety of probabilities and possibilities that even an approximate answer can be made only on the basis of conjectural grouping of circumstances.

But before entering on this task I may be pardoned a brief preliminary, bearing more or less on the general features of the subject. I think it both safe and proper to say that the mass of the interested public are but illy informed as to the loathsomeness, as well as the danger, of this disease. Few of them have seen a case at any period, and fewer still when in its worst stage. Their conception of it is of necessity based largely on hearsay and conjecture derived therefrom, both of which are liable to be discounted in their final conclusion as to its character and quality. They have but faint idea that the poison may lurk in the most costly fabric as well as in rags; that its traces may be found in hotels, carriages, street and railway cars; that the air in an infected district is far from safe; in brief, that it is possible to become contaminated in the most unexpected ways and places; that this disease is thoroughly cosmopolitan, making no distinction as to age, sex, or condition of life.

Whether it be from a lack of knowledge and appreciation or not, the fact remains that the general public are to a great extent practically somewhat reckless, for whether the purpose be business or pleasure, few persons decline to visit a locality where the disease is known to be rife, probably presuming, as do soldiers when going into battle, that the party to be injured is anyone but themselves.

The manufacturer of clothing pays little heed to the possibilities of his sweat-shop made garments being infected, and therefore certain to develop the disease in the wearer. The second-hand clothing dealers push their business with but little regard to the terrible possibilities. A large part of the public are negligent of their own vaccination and revaccination, and shrink from the vaccination of their children as if it were a fatal poison, and to a great extent submit only because school boards may and do prohibit the unprotected from attending school, while on the other hand the truant officer is a terror that they cannot escape.

The knight of the highway, whether he tramps to obtain work or to avoid it, is totally indifferent as to his clothing and company, eats and sleeps in any kind of a den. Wholly innocent of soap and water, he dons any kind of clothes that will hide his worthless carcass, that he may be in the best form to ask alms at the doors of the frugal innocents, whose pity for the forlorn liar prompts them to contribute to his needs, possibly to receive in return a contribution from his pathetic raggedness—a contribution that will cause them to remember him to the end of their lives. Thus through legitimate travel and trade, through both travel and trade that should be illegitimate, but especially through the ever-weary pilgrim of the highway, the most remote and unsuspecting community is liable to a shocking surprise.

It is true that those situated on the chief lines of transit are the most liable, but it is equally apparent that the liability extends to the most secluded home and hamlet.

If these facts were appropriately considered by those in authority it would result in more or less preparation for the unwelcome visitor, preparations that in the trying hour would be of infinite comfort and value, and if that hour failed to come, an appreciative community would still have ample cause to be thankful. But I am expected to deal with things as they are, instead of as they should be, and to make such answer to the query as I may be able.

The circumstances will necessarily vary, and what is to be done must be so adjusted as to as nearly as possible, meet the demands of the hour. If we suppose a town or city in which preparation has been made for a possible visitation—where an active health board has taken time by the forelock—we will find a capable and energetic health officer,

a more or less trained and fearless sanitary force; a detention hospital for homeless or other suspects during the period between arousing of suspicion and the time when the diagnosis can be made certain; and apart, and some distance removed, a contagious disease hospital for treatment of the cases that proved to be genuine. An ambulance, or some other appropriate means for transportation of patients, must be provided and in readiness. Whether the patient is quarantined in his own home or in the detention hospital, all persons, however slight the exposure, are to be vaccinated. All those to whom the exposure is deemed in the least perilous are placed under strict guard, and all others, however remote the possibilities, are kept under observation. If the case in hand proves to be small-pox, and the patient is taken to the hospital, dangerous clothing and bedding are burned and the house thoroughly fumigated, and every possible trace of contamination removed from the persons and clothing of the occupants that are to be continued in quarantine. The sanitary men thus engaged must be protected by either having had the disease or a very recent successful vaccination, and, when handling the patient or fumigating the house, should wear a complete outer suit of rubber clothing, including a rubber cap, with cape and face cover, and rubber gloves for the protection of the hands. The same is demanded of the attending physician, and this whole protection outfit is to be fumigated after each exposure, and thus kept in readiness for future service. All attendants, either at home or in the hospital, being continually exposed, must be protected by vaccination, or, preferably, should be those who have had small-pox.

This recital, somewhat brief and incomplete in detail, serves to show the nature of the barrier to be maintained by the health department between the patient and the public, the omission of any part of which is fraught with danger. If, on the other hand, we supposed that a case occurs in which few or none of these preparations are made, embarrassment is found on every hand, but the line of action should be in accord with and as nearly as possible attain the same end as I have just detailed. A person having his own home may be quarantined there, and a little time taken to secure any protective articles that may be necessary, as well as the services of a physician, but he and all concerned should be required to observe the caution and care I have just indicated.

The real difficulty, however, arises when the party is homeless, perhaps a stranger. Humanity and duty unflinchingly demand that he be cared for and the public afforded a full measure of protection. He may be found in a boarding house, a saloon, in prison, or anywhere; but wherever it may be, the health authorities are called upon to remove him at once. No family will accept him, and he can be forced under no man's roof. There being no detention hospital, no small-pox hospital, no sanitary force, they must be improvised. A medical man must be found who will take charge of the case, a cook and nurse who enjoy protection and are willing to undertake the service. These parties must be faithful, fearless and willing men—men of good judgment and steady nerve. An airy, a flighty or a drinking man will almost certainly lead you into difficulty. From a moderate experience I have learned to rely only on staunch, thoughtful and strictly temperate sanitary men. I have also learned that the larger part of those who offer their services are valueless, or worse, but in an emergency such as I have supposed, the best that can be done must be accepted and a sharp lookout kept to detect and correct negligence and any possible variation from strict duty.

But to be more specific as to detail, the first embarrassment lies in determining positively that we have a case of small-pox and nothing else. A stranger comes into your village. He is perfectly well at the time. After a few days he feels somewhat ill; suffers from headache and aching of the back, has more or less fever and a high temperature. All these indications may be slight. Presently certain spots appear about the face, and in a short time small papules appear on the forehead. He may or may not have some soreness of the throat. With the appearance of the papules he feels better. There is little in this and other symptoms to arouse the suspicion of an unsuspecting physician. If suspicion is aroused, that is not sufficient; it must be a certainty. The first patient is to be treated as a victim of small-pox, or he is not, and even an expert

hesitates until the vesicles form and commence to pit. Capable men have felt sure, sent the patient to a hospital, and have had occasion to bitterly regret it. Unfortunately a large portion of medical men have never seen a case of the disease, especially in its early stage, when accurate diagnosis is the all important question. The protection of a community demands that as few persons as possible should be exposed to a suspicious case, thus depriving medical men of an opportunity to learn that which they afterward may be blamed for not knowing.

I have just stated that a suspect who has a home may be quarantined there, at least until it is clear that he is certainly afflicted with the disease; and it may be best under certain circumstances to continue treatment there. In the case of the homeless, who must be secluded, I can only suggest that possibly an empty house that is worth but little may be found, that is so situated that it would be appropriate for use. All that is absolutely necessary is to protect the patient from the inclemency of the weather for the brief period during which he remains a suspect. In the absence of such a house or shed, a good tent with fly might be quickly obtained that would in warm weather serve every purpose, and if supplied with a floor and stove and placed in a position that would protect it from chilly winds, would answer very well for the entire course of the disease. The attendants who have charge of the patient during this preliminary stage should be continued to the end; and if the detention hospital be used, the attendant there should go with him to the small-pox hospital as his nurse, thus saving the quarantining of one person. If either the old house or tent be used for detention, and the case proves to be small-pox, they should be thoroughly cleansed and fumigated, or, preferably, destroyed by fire. Of course there should be a free display of cards and a yellow flag plainly marked with the word "Small-pox," that all may be warned of danger.

After death or recovery, too much care cannot be taken in destroying or cleansing and fumigating the building and all its appurtenances, including every article within or without the structure. In this particular I fancy that mistakes are liable to be made, and the work should either be done or overseen by an exceedingly careful, persistent and level-headed man. In fact, these are qualities required in all parties directly interested from the beginning to the end.

As a substitute for an ambulance I have known a patient in the papular stage to be taken to a hospital in a buggy, having been dressed in a rubber outfit, as previously described, and a sanitary man equipped in the same manner acting as driver.

In conclusion I desire to say that I have not attempted to lay down rigid and inflexible rules, but rather to suggest what would seem best to be done, always remembering that circumstances alter cases, that to do the best that the situation admits of relieves the performers of all reasonable responsibility, be the results what they may; but, withal, urging health boards and health officers throughout the State to make such preparations as are possible before the calamity is at their doors.

The Chair: The subject is now before you for discussion. Has anyone anything to say upon this subject?

Dr. Probst: Mr. President, I wish, if possible, to emphasize one or two points made in the admirable paper just read. The doctor advises us to select only careful, temperate men for guards or sanitary policemen when dealing with small-pox. This is very important, as careless or drunken guards may themselves spread the disease. I have known several instances of this kind. A man set guard to a small-pox patient often imagines that he requires a little black jug to keep up his courage, or his circulation in cold weather.

An instance at Akron shows how easily small-pox may be spread by careless guards. One case there was being guarded by a German who had had small-pox. There was also a German nurse who had had the disease. On one or two occasions, as we afterwards learned, the nurse came out of the house and, standing on the inside of the fence, talked to the guard who was outside. This guard carried the disease home to his wife. She had been well vaccinated, and had such a mild attack of the disease that no physician was called. They claimed, in fact, that they did not know she had the small-pox. A couple of weeks later her young babe, which had not been vaccinated, was taken sick, and had a severe attack of small-pox. A physician was then called, and it was not till then that the exposure of the guard to the nurse was known. Another lesson to be derived from this case is the necessity of vaccinating all members of the families of those who have in any way to deal with small-pox.

Another thing with reference to guards and nurses should be remembered—we always select, where possible, those who have had small-pox. These persons should be vaccinated, for it is not so very rarely that a person has the disease a second time, and may thus spread it. One of the nurses employed as nurse at Akron, and who had had small-pox, contracted the disease from his patient. Fortunately he came down with the disease while still in quarantine.

When you are quarantining a family at home, and guards are employed, you should have both day and night guards. It is impossible, otherwise, to insure that someone will not enter or leave the house.

I remember an instance at Pomeroy, during their small-pox epidemic, illustrating this point: Two or three cases of small-pox occurred in a large family of Germans who lived in an isolated house on the outskirts of the town. A guard watched the house from daylight to dark. A week or more after the guard was placed there we found that the grandmother of the children who were sick went regularly to the house every night, and returned to her home before morning.

It is only by the most careful oversight of small-pox cases that we can successfu ly quarantine this disease in the house of the patients.

Dr. Hopkins, of Ashtabula: Mr. Chairman, I have been very much interested in this paper. We had one outbreak of small-pox in our town, since I have been health officer, and we kept that in the home. We had at that time an old building that we called a pest house, and it was a pest, and thank the Lord it has burned down But I have thought a good many times since then what would I do if small-pox should alight in our town. I have talked with our board of health and our council in regard to a detention hospital, or pest house. We have a population of about 10,000 or a little over, and I should like to know whether it is

advisable for us to go to work and build a detention hospital, or whether, as suggested in the paper, we should get some old house or a tent or something of that kind. Of course we have come here to learn something and get some practical suggestions, and we certainly have got a good many out of this paper, and a good many from Dr. Probst. I would like to ask just one more thing. Dr. Probst says we should have our guards there night and day. I know I got a nurse to help out a family who had small-pox. She was not afraid of it, but she was one of the kind that needed a small jug to keep her from taking it, or to cheer her up, and one night the family reported that their nurse was gone. I scoured the town to find my nurse, but could not find her. I worked faithfully for several hours and finally gave it up. The next morning I found her and I tried to find everybody with whom she had come in contact. I vaccinated everybody I could find who had been in that part of the ward. I insisted that she must return. This she declined to do. Thereupon I told her I would have to do something with her—that I should have to put her under arrest, and would make her all the trouble I could. She finally agreed to come back and did so. We were lucky enough in that case not to spread it We had a guard on duty at all times, and it was in the dead of winter. You know we have got to have some place for the man to stand. In the evening, on that bitter cold night, our guard had a room just across the street, where he could keep warm, and still keep oversight. However, he did not have his eye on that nurse I will promise you. The guard should have a temporary building right by the house in order that he can watch such cases, and keep people who are in the house from leaving the house and thereby spreading the disease, as is the case in a great many instances. I should like to hear from a great many others and their opinion as to whether it is wise to go ahead and put our city to the expense of constructing a permanent pest house.

Mr. Shachleiter, of Ironton: Gentlemen, with reference to a pest house. I would like to know at Ironton what distance the pest house should be built from the city, and whether on lofty ground or on a meadow. There is quite a difference of opinion in reference to their location. We have several isolated places selected for a pest house, but we have not yet come to a conclusion which one to purchase. The trustees are in favor of dedicating a certain park out of the city for pest house purposes In the discussion I would like to know the distance generally of those isolated places from a city, and also what mode of transportation is usually adopted to get back and forth. We should be very much pleased to hear from the doctor in reference to the work there and elsewhere, so that if we apprehend any great epidemic we can prepare for it. We live down on the Ohio and we cannot tell what may happen, but so

far we have been very fortunate through the efforts of our competent health officer in seeing that we have a good sanitary condition existing in Ironton to avoid epidemics.

Mr. Fee, of Warren: We had a little experience in the way of a pest house. A number of years ago, outside of the city we selected a place in which there was a beautiful grove, and it was only accessible by passing through the cemetery and across two railroads. The authorities built a pest house, a frame structure, one story high, and about twenty by twelve feet, plastered inside, windows and doors, and a partition in the middle, making two rooms. We supposed this to be ample for us in case of necessity, and kept it there in repair for a number of years. Fortunately we never had occasion to use it. The house has gone into decay, been injured very greatly by tramps, who frequented that isolated spot, and it has been a source of great trouble. They carried off the windows and window sills and doors, and used them for kindling and camping fires. We have repaired the building once, but I understand that it is in a very deplorable condition to-day.

Dr. Hedges, of Delaware: I was very much pleased with the doctor's statement. I think he covered most of the ground in reply to this question. As to the question of pest houses, I don't believe that small cities, or even large cities, can maintain and keep up a pest house. I don't believe that it is necessary for a city of from 8,000 to 10,000 people to have a pest house. I am informed by members of the board of health at Delaware that two pest houses had been built and were both destroyed—burned by somebody. The people naturally have a dislike for those things. Some one eventually will burn them. If you have a pest house the only thing to do is to have it occupied by somebody living in it who can take care of it. It is the only way you can keep up one. If a person has a good home the people can be isolated in the home. It has been done in our city, and without the spreading of the disease at all. A few years ago a man came to my office covered with small-pox pimples—a student in the University. I told him he had small-pox and advised him to go to his room and I would turn him over to the town authorities. The city council took care of the case. The young man went to his room, and his room mate remained with him and took care of him. The house was quarantined thoroughly and the young man was cured and there was no spreading of the disease. The student was vaccinated immediately, as was also the physician who attended the small-pox patient, and the disease was stopped there. Other cases have occurred in the city and been treated that way.

A Member: The subject of a pest house or hospital is something I believe the majority of the smaller cities are considering at the present

time. Our attention has been called to a hospital used by the German army. I will not go into details. It seems to me that somebody—some member of the State Board interested in the subject—should look into this matter more in detail. This hospital spoken of can be taken down and fumigated and made absolutely proof against contagion. I simply refer to this in the discussion.

A Member: From a business standpoint I consider it a very important matter to look after the proper methods of taking care of and quarantining cases that may come to our respective towns. I think the matter of a tent hospital is a very good one, and I came to the conclusion that it was a most valuable way of taking care of most of these cases—think it makes a splendid temporary pest house. After you are done with it it can be thoroughly fumigated, so there is no possibility of contagion from it thereafter. For my own part, I think temporary hospitals are all that are needed.

Mr. Wickham, of Findlay: Gentlemen, I want to say to you, in case we had small-pox at Findlay—and I presume that a majority of the towns represented here are in the same fix—that we have a number of vacant houses, large and small, standing in the suburbs of the town and isolated from one another, and I would say to our brother health officers, should they come to me, that I would seize one of those houses, and have it repaired if necessary, and use it for a hospital. And after the case had been disposed of, I would have it condemned and burn it down.

The Chair: Gentlemen, the next subject for discussion is, "Well Pollution in Relation to Typhoid Fever," the discussion to be opened by Mr. Josiah Hartzell, member State Board of Health, Canton.

WELL POLLUTION IN RELATION TO TYPHOID FEVER.

By Mr. Josiah Hartzell, Member State Board of Health, Canton.

The existence of micro-organisms has been known ever since the discovery of the microscope in 1675. This knowledge had no special interest to physicians until about 1850, when Da Vaine, a provincial French doctor, demonstrated that certain infectious diseases of animals are due to microbic action. It happened that one of these diseases—anthrax—was common to both animals and men. Thus was the key to facts underlying the germ theory given a real turn, and a new gateway, opening upon realms of unspeakable import to the human family, for the first time in the world, stood slightly ajar.

Among thinking men there had been a settled belief that sudden and simultaneous outbursts of contagion were due to living reproductive organisms. There had been, also, an indescribable craving and yearning for light and hope. Both came to those who grouped in the darkness, not with a flourish of trumpets on the mountain top, but hope with Jenner, the humble English doctor, and light with Da Vaine, the equally humble French physician.

Closely following the differentiation of the bacillus of splenic fever, and more especially after Pasteur had silenced the doubting Thomases by the crushing logic of his

sterilized cultures, there was a tumult of prophecy. The bewilderment of immediate and unfulfilled expectation was fraught with discouragement, and theorists and anti-theorists pulled apart harder than ever. It was only another example of the niggardliness with which Nature doles out the treasures of knowledge from her storehouse of mysteries, and even then without permitting a "why" or "wherefore."

We ask, why does the apple fall? Gravity. Why does gravity pull the apple down instead of up? That is the end. Again: Why is grass green? Because of the action of the sun's rays on the clorophyl. Why does the sunlight turn the clorophyl green, instead of red or brown? Again we find the door slammed in our faces. Why does quinine neutralize malarial poison? There is no response. Edison was not so far wrong when he declared that, "We don't know the millionth part about anything." The wisest men are those who know that they know the least.

Thirty years of unremitting experiment and research had to elapse after Da Vaine before the romance of the invisibles had been in any way pushed aside to make way for scientific truth. Then for a few years some of the authors of the woes of mankind were caught in pairs. First the inciting causes of leprosy and gonorrhœa in 1879; of typhoid fever and pneumonia in 1880; of consumption and glanders in 1882; of cholera and diphtheria in 1884. Since the date last named there has been but one addition to the list, namely, the microbe of influenza in 1892

It may be said that this rate of progress has been slow. Measured by our desires that is true, but the list of diseases that can be diagnosed by the microscope is gradually lengthening. If an accounting is taken of the difficulties that have had to be surmounted, that which has been accomplished is the marvel of the closing century. The invisible world swarms with micro-organisms whose functions are mostly benign. Their habitat is in the body and out of the body. Almost all the phases of organic life, of growth and death, of assimilation, of decay and rehabilitation, are due to them. If from these families of organisms, the numbers of which are identifiable only by infinitesimal, and almost indefinable traits, it has been possible to select out some of the culprits, and to fix their guilt by the irrefragable test of isolation in sterilized cultures, it has been due to deft hands, to an infinite patience, and to a faith and a courage which should challenge the admiration of the philanthropic heart.

If statues and monuments have been built to poets and statesmen and orators, why not also to those who have placed the conservation of the public health on a rational foundation. It is time that our world of to-day abates something from its worship of the chiefs of war; of those who by the accident of battle, or by the skill of intrigue have filled historic pages, and bear a more willing testimony of gratitude to those whose mission it has been to save and not destroy. These, too, have fought a good fight. They have braved prejudice. They have fought the invisible enemies of death, and have fought on while the world laughed. They have vanquished enemies ten thousand times more potent than the hosts of Xerxes and Cæsar. They have chased away the blinding phantasms and empiricisms that enshrouded the foundations of a noble calling, and have thrust into their places the granite rock of established science. Into the world's life; into the houses of the highest and lowest alike, they have flashed, not the lurid gleam of hate, nor the conscript's terror, but the glorious and healing gleams of safety and hope.

These observations may be styled irrelevant. They are not. It is due that the instrumentalities that have rendered possible the rational discussion of a subject of this nature; that have ferreted out and exhibited to us the causes and results of certain phenomena, should receive proper mention. Typhoid fever is not the only water-borne, parasitic disease that may be derived from a well. In the interest of the conservation of health, the biologic origin of contagious disease should be adhered to; not letting go of experimentally established truth on the one hand, and not failing to seize upon every proper occasion to improve on the sanitary lessons which are warranted by such truth.

Along the route of the inner lining of the alimentary canal are distributed from twenty to thirty generally circular patches, or aggregations of glands. These are called

"Peyer's patches," in honor of their discoverer, Johan Peyer, a Swiss professor of eloquence and dissection, in 1653. In these later days one has to pause and hold his breath in admiration of the wide-apart functions which were so harmoniously fused together in the person of Professor Peyer. His eloquence, like that of myriads of others, has died away with the sound of his voice, and, but for the encyclopedia, would have long since been forgotten; but his anatomical discovery, linking his name with the development of science, has assured the perpetuation of his memory in the hearts of the benefactors of mankind. He was the Stanley who explored the darkest recesses of the ileum, while Eberth, with the instinct of the true naturalist, pointed out the formidable propensities of certain organisms if they were carelessly given admittance.

In a recent address by Dr. S. P. Wise, a member of the Ohio State Board of Health, it is intimated that the Eberth microbe has some very wicked partners. He does, however, emphasize the fact that, whether it be the chief, or only a partner, that engages in the business, the lesson is just the same. All have the same tendency to fix their homes in such soluble, decomposing organic matter as may ultimately float them over the patches of Peyer, and all, alike, give a wide berth to the homes of the clean.

These patches are most numerous in the ileum, hence the tenderness of typhoid patients in the right side, where these inflamed and ulcerated patches, or glands, are, to use a common phrase, the favorite feeding-ground of the bacillus typhosus.

All living things have their preferences in the way of alimentation and reproduction, and the invisible bacterial family is no exception. The inciting causes of leprosy, of pneumonia, of phthisis, of cholera and of diphtheria have, each one of them, their organs, or set of organs, which constitutes their strong citadel, and in which, when once intrenched, they elaborate those formidable poisons which heavily tax, and perhaps destroy, the vital powers of their most unfortunate victims.

I quote from Sternberg's recently published "Manual of Bacteriology" as follows:

"Eberth demonstrates the presence of the typhoid bacillus in the spleen and diseased glands of the intestines in 1880. The disease is due to a micro-organism which is capable of multiplication outside of the human body in a variety of media, at comparatively low temperatures, and is widely distributed, and is a hardy microbe. Eberth's bacillus complies with all these conditions.

"The pathogenic power of this bacillus depends on the formation of a ptomaine rather than upon a special faculty for multiplying in the tissues of the living animal. This bacillus retains its vitality for many months. Sternberg preserved bouillon cultures for more than a year in hermetically sealed tubes, and found that development occurred promptly in nutrient gelatine inoculated from these."

Speaking of disease transmission, Sternberg says: "Among the pathogenic bacteria which are liable to find their way into drinking water, the most important, from a sanitary point of view, are the bacillus of typhoid fever and the spirillum of Asiatic cholera. Both of these micro-organisms are present in great numbers in the excreta of persons suffering from the specific forms of disease to which they give rise, and are consequently liable to contaminate wells and streams which receive surface water. Epidemics of diseases have been frequently traced to the use of such contaminated water. Laboratory experiments indicate, however, that continued increase of these pathogenic bacteria in drinking water is not likely to occur, except under special conditions, and that they die out after a time, being at a disadvantage in the struggle for existence constantly going on among the numerous species which have their normal habitat in water."

The inciting cause of typhoid fever is, therefore, a micro-organism. Microbes are very small, varying from a 500th to a 50,000th of an inch in length. The bacillus of Eberth is about half way between. They can hardly be classified as vegetable or animal—they are microbes. Water carries them long distances, and they may live a long time. Prudden found them alive after being imbedded in ice thirty-seven days. Warmth and the presence of organic matter promote their growth. A bacterium will divide into two in an hour; these two become four in another hour—a rate that gives 17,000,000 as

the increase of one day. In less than five days they would, at the same rate, fill all the great waters of the earth.

But they have their enemies. Pasteur found that oxygen attenuates and extinguishes them. As we ascend the mountain, or push out into the sea, the air-borne microbes become fewer and fewer. In mid ocean and on the mountain top the air is freed of their presence. Also the waters of deep springs and artesian wells are generally found to be meagerly peopled by water-borne micro-organisms.

On the other hand, river and other surface waters swarm with them. Stagnant and defiled waters constitute their ideal habitat. Filtration through sand beds and porous porcelain is ascertained to have reduced the proportion of them, sometimes from forty-three to one. Of course, boiling and distillation kill them.

Three-fourths of the weight of the human body is water, a mineral which becomes fluid at a lower temperature than most minerals, and stays melted, like quicksilver, at ordinary living heat. It not only constitutes part of the body, but it is the mechanical agent for the admission of nutrition into the body; it distributes the same to its various destinations; it gathers up and carries away the debris. And yet water receives as little, and often less, attention than anything about the house. There are those who, in these later days, filter or boil where there is the slightest suspicion; but they are, comparatively, the rare exception. Outside the city supply, and often inside its reach, the well is depended on for drinking water, and contaminated wells constitute a prolific source of disease. The general subject of wells can be reviewed more intelligently after presenting a few examples, or modes of water infection.

More than fifty years ago, in 1843, the little village of New Boston, Erie county New York, furnished the most striking illustration of the dangers that may lurk in such a well as that just adverted to that has yet been reported. A young merchant had bought goods in New York City and was returning home westward by stage coach when sickness compelled him to stop at the village tavern, where he died of typhoid fever. Two weeks later there were sick persons in every family of the village except three. Of the forty-three inhabitants composing the village twenty-eight were sick and ten died. All the families got their drinking water at the tavern pump except the three families above referred to. The three families that escaped were those of a father, his son and son-in-law. The father had had a quarrel with the landlord, and thereafter he and his avoided both the landlord and his pump. The landlord brought suit against his enemy for poisoning the well. Dr. Austin Flint, of New York City, was sent for.

Dr. Flint was one of the early pioneers in that field of investigation which occupies your attention here to-day. He was a representative of those advanced thinkers who believed that contagions were due to a cause common to all; in fact, were due to air, water or food that had been infected by specific, living, reproductive micro-organisms of greater or less virulence. Both he and Gerhard and Pennocke, of Philadelphia, and others that might be named, on both sides of the Atlantic, had publicly sustained the germ theory—only a theory then—by arguments that left a profound impression. They must not be forgotten. If the methods employed by modern State and local health boards have anything in them worthy of commendation; if the destroying angel has turned a more kindly face toward the children; if men sicken less and live longer; if cholera has been barred out of enlightened society; if the pestilence that stalketh at noonday has been pushed back into his lair and shorn of his mysteries and his terrors by the sharp scimeter of experimental truth, then let us not forget the early watchmen who, from out of the night of fear and ignorance and superstition, hailed the first dawn of a new era and electrified their fellows by pointing the finger of well-grounded prophecy to the aurora that streaketh the approaching day.

Dr. Flint's investigation established the following sequences: The dejecta of the fever patient had been thrown into the privy pit. The latter was a pocket in the sand, its bottom only a few feet above a clay-seam; its leachings reached the clay-bed and ran along seventy-five feet to the well. The inner surface of the well, at the depth of the

clay, and from that point down to the water, was coated over by a greenish-brown streak of filth. The well was closed and the fever stopped. The man who had been accused of poisoning the well had a good case for damages for slander, and did commence proceedings, but in view of his complete vindication by Dr. Flint, and of the calamities that already overwhelmed the community, he voluntarily relented.

Scarcely second to the above in dramatic incident was the experience of Lausen, a Swiss village that was suffering sorely from an epidemic of typhoid. The water supply was a spring bursting from the base of a mountain, noted far and wide for its beauty and purity. Certain observing persons had noticed that the volume of its water swelled and shrank according as there was high or low water in a stream running through a valley on the other side of the mountain, several miles away. In a hamlet on the bank of this stream there had been a fever epidemic. The scoffers scoffed, but the aforesaid observers threw flour into the stream. The spring was not affected. The insoluble suspended particles were detained by the earth-filter. They then threw salt into the stream, and the spring promptly became salt water, clearly showing by what route the fever which prevailed in the village had reached the city.

Parenthetically, it is worth while here to remark that while salt ceases to be appreciable to the taste when diluted in water beyond the ratio of 426 parts to one, there is now in use in Germany a new disinfectant, and detective as well, named saprol, which, being thrown into the privy vault, reveals whether wells are affected by soakage with much certainty. Both the smell and taste of this chemical are perceptibly present when it has been diluted in the proportion of 2,000,000 parts to one of water. It is the everlasting, untiring German who keeps "pegging away, and pegging away," and thus, now and then, bringing to light new safeguards to health and life.

A visitor carried the fever to Iron Mountain, Michigan. From him it reached a well, and from this well it went, through a sandy seam, to all the wells in the town, carrying sickness and death on its way.

In digging a deep sewer trench in Canton a strong water-seam was encountered, and the wells supplying a row of houses on a street lower down promptly went dry. If, on refilling the trench and restoring the water, the fever had subsequently broken out among the residents of that street, the old way would have been to attribute the calamity to inscrutable Providence, instead of to a leaky sewer. It would have been, in fact, not the act of God, but the lack of God's pure water.

A young man who had spent the holidays in Philadelphia returned to his home, located on the banks of a stream several miles above Plymouth, Penn., in January. Among the things he took home with him from the city were the seeds of typhoid fever. His dejecta was thrown out upon the snow. It was a rough, sparsely settled region, and a thaw in March washed the hillsides off into the stream. A month later there had been eleven hundred cases of fever and one hundred and ten deaths in Plymouth. The wells in the town were dug in the sand, their water-levels rising and falling with the volume of the river. The users of well water were stricken the same as the rest.

Dr. Ashmun, formerly health officer of Cleveland, visited a house in which fever was present. Finding the cesspool full he ordered it to be emptied. As the level of the contents of the pool went down, he noticed that the water in the house well subsided also. Further inquiry established the fact that this criminal intercourse between well and cesspool had been going on for a long time and had borne large fruitage of disorder and death.

Only several months ago a spring broke out of the mountain side close by a hospital near San Francisco. The water was clear and there was great joy among the officials, who ordered the new spring to be safely guarded. Dr. J. R. Laine, secretary of the California State Board of Health, aware of the little likelihood of such a spring, and also knowing the route of the hospital sewer, suggested the possibility of a leak in the latter as the source of the spring. There was a leak. It was repaired and the spring went dry.

In one of Dr. Probst's missionary tours he found a village located on a bed of porous limestone, only a few feet from the surface. Excavations in this rock constituted both wells and privy vaults. Twenty-one years of health were succeeded by seven years of fever. The doctor prescribed the dry-earth system, instead of vaults below, and for the surface above the removal of all garbage and manure. The good gospel of cleanliness bore fruit in complete salvation.

It may be here remarked that the water from wells in New York City has been found to be polluted at the depth of 1,000 feet, because the dip of the rock is nearly vertical; while that from only a few hundred feet below Paris and London is pure, because the rock-seams are horizontal and the water comes from a distance.

As a result of the information gained and published there has been, on the part of thinking people, a decided interest taken in the subject of drinking water. I say thinking people; and these are as one to one hundred of those who act from impulse only. Therefore this phase of educational campaigning has barely commenced.

Even these few thinkers have commenced their thinking none too soon. While the country remained sparsely settled and agriculture absorbed the attention of the great body of the population, dangers to drinking water were comparatively rare. In emerging from country to village, and from village into city, personal environments are changed. Farmers may do, and keep on doing, things which urban residents may not do. The city affords superior advantages and attractions. It is also the target for many venomous fees from which the ruralist goes scot free. Many suppose that they can go on living in the city as they did in the country, and their children after them, taking no other precautions to insure their health than before. This would be a great mistake—a fatal mistake. If persisted in either they or their successors will pay the forfeit with their lives. It is a fact to be well remembered that with people came trouble, and in swift ratio. The hardest enemy we have to fight is ourselves

When the attention of reading men had been once fixed on the subject by published investigations there was a sudden and simultaneous outburst of literature on the subject of water contamination. Physicians, and occasionally other people, had hundreds and thousands of cases to report; epidemics, the inciting causes of which had been beclouded in mystery, but now new truths and a new dispensation had partially lifted the clouds and gave promise of a brighter day. I have presented a very few of the published cases, selecting the same with the special purpose of exhibiting some of the incidents which may lead to the infection of a well by Eberth's bacillus, and showing that the poison may, as the result of carelessness, enter the well in each one of the following methods, namely: It may enter the well at the top, or it may go from a cesspool and enter at the side or bottom; it may go from one to the other through many feet of limestone rock; it may descend 1,000 feet through a seam in the rock; or it may reach the interior by leeching down from the surface; or it may travel from one well to another on the same water-bearing seam; or it may break through a leak in a sewer and emerge as a surface spring; or it may sail down a river two miles and then pass into wells located near the water stream; or it may travel an equal distance under a mountain and emerge on the other side fully fanged for the work of human destruction.

As I have already stated, the examples presented above were chosen with the design of illustrating certain modes of transmission. Because typical cases were taken it must not be inferred that new ones are not occurring. The contrary is true. Here are some that have fallen under my eye very recently:

"INDIANAPOLIS, IND., *November* 7. Reports to the State Board of Health from different sections of the State indicate an unusual amount of typhoid fever as a result of the low temperature and bad water during the summer. In many counties the mortality reaches from 33⅓ to 40 per cent. of the cases reported." And so on, showing up a sad state of affliction.

"LONDON, *December* 12. The origin of the typhoid fever epidemic that raged here for several months has been discovered. A delegation of health officials got wind of

something wrong on a watercress farm. They paid a visit to the farm and made the extraordinary discovery that the water that flowed through the ditches for the propagation of the cress was strongly permeated with sewage, and that consequently the germs were absorbed by the plant and thus likely to be communicated to the individual partaking of the cress."

MIDDLETOWN, CONN., *December* 4. An epidemic of typhoid broke out among the students of Wesleyan University, and its cause has been carefully traced by Dr. C. A. Lindsley secretary of the State Board of Health, working in conjuntion with others, to oysters eaten by students. These oysters were placed for a time in a fresh water creek at New Haven for refreshening and fattening, within 300 feet of the outlet of a private sewer from a house where there were two cases of typhoid."

These three are only a tithe of the aggregates, but consider what they represent! More than a hundred deaths; more than a thousand sick beds! Think of the loss to society; of the inexpressible sorrow to the homes! And all this might not have been—would not have been, had intelligent precautions held the places of carelessness and ignorance. With what new and startling significance does the mind revive the opening paragraph in one of the reading lessons of boyhood: "We must educate; we must educate!"

There is a town in Ohio noted for the intelligence of its people. Its well water formerly came from wells about thirty feet deep, with a shelving rock bottom. There was no live water—all was leechings. In time typhoid declared its presence. Water works were built, the supply being taken from a large hole dug to a low pocket of the shelving rock. This drained the wells above, and underdrained the town. The fever went right on. Some of the proprietors whose wells had been drained by the water works well, excavated pockets in the rock in their well bottoms, thus catching and retaining as much of the drained water as possible for their domestic use. They suffered from typhoid the same as before. Dr. Probst advised the town to get a better water supply years ago. It was not done; neither has the fever relaxed its attentions—especially has the year just passed been fraught with heavy calamity.

The most stunning recent indictment of typhoid-breeding wells is a document entitled: "Typhoid Fever in the District of Columbia, by the Medical Society of the District." From this report, which is startlingly precise in its statements, it appears that the fever rate of Washington is one of the highest. The Capital City of our boasted republic! "'Tis strange, but 'tis true, and pity 'tis 'tis true." Red spots on a good city map show the lots on which there have been deaths from typhoid between 1888 and 1892; blue spots indicate the locality of public wells; and other spots show the place of each privy. The ratio of frequency is almost exactly the same in all.

While it would seem to be almost impossible to exterminate the zymotic diseases with a known cause as completely as theory would indicate might be possible, and while this is especially true of typhoid fever, the success of intelligent effort in exterminating these calamities, constitutes one of the most hopeful and glorious pages in modern history. Thorough purification is the key to that success. There is no half-way house. The soil is the foundation. Clean the soil and then you will have pure water, and air fit to breathe. Take the cases of Memphis and Vienna.

Memphis washed and scrubbed in '78, the first of her two cholera years. She was the cleanest city in America. It was a surface polish. The plague redoubled its onslaught in '79, nor would it stay its hand until the streets had been ripped up and the wells and cesspools abolished together.

Vienna, with excellent sewers, had a death rate from dysentery of seventy per 1,000. With the introduction of spring water the rate fell to, and remained at, about one per cent. Brooklyn, with good sewers, and water double-filtered through the sands of Long Island, has the lowest typhoid death rate in America; and Washington, with many bad sewers, and many wells, has one of the highest.

There are wells and wells; wells which supply water drained from the contagious surface area, and wells furnishing water from a distance. The latter may be classed as springs; springs whose source is relatively high, as in the case of artesian wells; springs which are popularly known as such, and whose supply source is about as high as the point at which the water emerges from the earth. As the source is generally lower than the surface, so a well has, in most cases, to be dug in order to reach the water level.

Every well dug is a drain for the reception of water from the surrounding earth. The impurities will go along, unless filtration takes place. The filtering may be effective for a time, but the fouling process reaches farther and farther down, year after year, until the water is reached. At considerable depths below the surface the oxidation, which near the surface keeps the filter effective in intermittent filtration, goes on slowly, or not at all. The action of the earth is mainly that of a sieve which removes only suspended impurities. Whatever is in solution remains in the water. Mineral waters, heavily laden with soluble salts, as well as waters thoroughly impregnated with cess-pool or barn yard products, may be as clear as a crystal, sparkle temptingly, and taste well. Clearness is no proof of purity.

For every foot of the well's depth it will drain from three to six feet in width, owing to the nature of the soil. A well twenty-five feet deep will drain the surface from 50 to 200 feet in all directions. If it reaches or penetrates a shelving rock or clay stratum it may receive leeching waters from a cess pool or barn yard 1,000 feet away.

A dug well is rendered more susceptible to injury than a driven well by the double fact that it is a more capacious drain and a poorer filterer. Copious wetting, or rains, carry impurities farther down, also bring the water level up, thus facilitating an evil contact. When once infected the period of drouth and consequent low water is most dangerous, owing to the great concentration of the contents. The low water period has been the most fruitful of epidemics.

The presumption should be that water coming from the sky above and from the depths of the earth is good. Rains over cities bring down plenty of non-pathogenic germs, but are not generally liable to objections which cannot be corrected by a good filter. If well water is from a live source, that is, if it comes from a distance, and if its impurities are only dissolved minerals, not sufficient in quantity to affect its palatability, then it is presumably good. The general supply from wells is of this character.

There are on record some notable cases of the restoration of infected spring and well water to purity. In a wide valley in England the rural inhabitants had been supplied by underground water, partly from artesian wells, partly from springs and partly from dug wells. On each lot, as in this country, there was a privy to carry things down, and a well to bring the water up. After centuries of earth defilement this water stratum became polluted. Diarrhœal diseases made it evident that no part of the valley was exempt. The protection of the soils and streams of the drainage district by police authority has resulted in lowering the sick and death rate to a degree which indicates a wholesome water supply as the benign result of burdens and restrictions which aroused great opposition in England, and the application of which would be impossible under the constantly changing regime of our political system.

Statistical reports showing the benignant fruits of the purification of water are more abundant than they used to be, and yet comparative views indicate that only a beginning has been made. We all think of war as a thing full of horrors. In twenty-two consecutive years of war England lost 79,700 lives. An epidemic of filth disease carried off 144,000 lives in one year. In the five years of our civil war 500,000 lives were lost. In an average of five years more than 800,000 persons died of preventable diseases.

Tables are often seen showing death rates before and after the taking of certain sanitary precautions. These tables show the saving of a great many lives that would otherwise be lost. In nine cases out of ten the resultant lessons from these tables are predicated either upon a change of water supply or on some other phase of effort having an ultimate relation to the subject now under review.

Long before the discovery of any of the baleful micro-organisms, Dr. Benjamin Rush said: "The means of preventing pestilential fevers is as much under the power of human reason as the means of preventing the evils of lightning or common fire." Dr. Rush is reported to have also said that when a case of typhoid developed an indictment of somebody should follow. Railroads and other corporations are required to exercise due diligence in protecting against personal injury, and society may sometime demand that corporations exercising a wider scope of power shall be held responsible for permitting the existence of any cases of filth disease.

Healthy living not only lowers the death rate, but also promotes immunity from disease. This was clearly proven by Dr. Wise in his article above referred to. The infection first weakens, then kills. Whatever cause saps vital resistance, pushes the door open so much wider. The women and children of Plymouth were just emerging from the confinement of a long and rigorous winter, with its consequent vital depression, when the enemy stole among them and laid waste their homes.

In taking this cursory review of the relations of wells and typhoid fever I could not know what special lesson those who assigned me the subject desired to have taught. They certainly expected the suggestion of no specific remedy. That is clearly impossible. There are as many wells as houses. The differences in situation are infinite. Many phases can hardly be touched upon, such as rainfall, evaporation and absorption, geologic formations; tests of waters; mechanical filtration; relations to the subject of diarrhœa dysenteries and lowered vitality which precede typhoid, and the general subject of resistance, and receptivity; cost of doing, or not doing; co-operation in cleanliness; is the infection air-born as well as water-born? are animals susceptible to it? relations to water supplies and sewers in cities.

Efforts to suppress an epidemic are occasionally favored by an accident. Between July 7 and September 7, 1873, there were 107 cases of typhoid at Armley, England. The health officer found that all the cases occurred on the route of one milk dealer. Milk is only rarely accountable for the disease. The health officer chained and locked the milkman's pump handle. The handle stopped, and so did the fever.

First of all it might incidentally be said, and should always be said, isolate and disinfect. These things will not be neglected by any physician worthy of the name. Give to charlatans and mushroom sanitarians a wide berth. If you have given due attention to the subject of healthy living, if you have been spreading the gospel of pure air, pure water and pure soil, you will know that the prime factor in locating your well is its *surroundings*. An ounce of prevention is worth a pound of cure. Let no puffed up conceit about looks and taste, or forked-stick oracle, lead you to ignore the *environments* of your well. Even a chemical analysis should not blind your eyes to surroundings. It is of little consequence to know exactly how many grains of earthy alkaline salts are in the water; but don't drink water that comes from under the city, or the barnyard, or the cesspool, or factory. Eliminate surface wash and impurities by filtering, and sterilize if possible danger by boiling.

If the typhoid poison is in the vicinity, boil and filter—distill if possible. In case of doubt get the opinion of a chemist. There is no chemical, or patent nostrum, which by addition to a polluted water, will make it pure and wholesome; but a correct analysis will dissipate mystery. Aeration, sedimentation and filtration will not render fever-tainted water safe. Boil it also until a pure supply is made available.

The safest general prophylactic is a sound common sense, grounded on a knowledge of what typhoid fever is, and its possible methods of transmission. It is an ubiquitous foe. It has every country, and season, and clime, for its own. The campaign against filth and disease, and in behalf of pure drinking water, should have universal co-operation. Forewarned by the lessons of the past, and forearmed by a stout determination, and sustained by an enlightened and discriminating public, the enemy can be kept at bay, and victory will crown the efforts of those who deserve it.

It is true that great men, following the lead of Jenner and Pasteur, are makin grand discoveries which tend to place therapeutics among the exact sciences, but the

are only the advance guard in this most noble crusade. If the invading enemy is to be overthrown, it must be done by the local board of health. To the real student of this phenomena nothing can be of more pointed interest than the reports of our health boards. One officer named eight cases of scarlet fever as having occurred in his town, but said "they were too mild to report to the local board." This was in 1892. In 1893 there were 27 cases of the same fever in the same town. Scarlatina may be mild, but never too mild to report. Another report concludes with this admirable statement: "All contagious diseases have been cared for, and we know of no instance where infection has been carried outside of the houses in which the disease originated." And still another secretary of a local board, reporting on six cases of typhoid fever in six houses, says the precautions taken were: "1, boil all water; 2, give patients their own dishes and scald after using; 3, no person to eat anything in the sick room, or that had been there; 4, disinfection of soiled clothing and excreta." Useless to say that there were no secondary cases either in or outside of the six houses. Again I say that if this is to be a millenium of good health it must come through you, the representatives of the local boards of health. To you it is given to enforce the old English common law of cleanliness, viz., the law that no man has a right to injure his neighbor. The great discoverers may plant, and State boards may water, but you must give the increase. It is you who have been placed on guard over the homes and lives of the people. When the insidious foe creeps in, and danger threatens, fail not, and fail never, to fling out the red flag of impending calamity, and thus assure safety to society, and to yourselves the grateful remembrance of your fellowmen. [Applause.]

Dr. Garrigues, of Massillon: Mr. President, I have listened with a great deal of interest, indeed, to the article read by Mr. Hartzell. I think a great many points of much interest are contained in the article, and the gentleman most certainly has my thanks for the very able article he has written, and I expect he has the thanks of every person present who is interested in these matters.

Dr. Young, of Chicago Junction: I would like to relate something concerning five cases of typhoid fever in our town. The house wherein the first case occurred was directly back of my house. Our water supply is from cisterns. The first case was an old German lady, who complained of diarrhœa, but she recovered after being sick some time, and in two weeks from that date a son-in-law was taken sick and died from hemorrhage of the bowels. The slops, etc., were carried around to the side of the house and thrown onto the ground—the discharges from the bowels and everything else. His brothers went there to take care of him. Two brothers died, and there were five cases altogether in the family and four deaths. There was a defective cistern there, and there can be no doubt but that was the way the sickness was caused—from drinking impure water.

Mr. Carey, of Wilmington: Gentlemen, I am not an M. D., simply president of the local board of health of my town, and I would like to ask what would be the proper course to pursue in a case of this kind: Suppose a health officer wanted to inspect a well. Where would be the proper

place to have the examination made, and what authority should pay for it?

Dr. Probst: There is no provision in the statutes for such cases, and unless local boards are prepared to pay for such examinations, I don't know what to suggest. I mean to say, there is no fund set apart for that purpose that we could use. In the state of Michigan they have a laboratory connected with their college at Ann Arbor, under the direction of the State Board of Health. Anyone can send in samples of water, or anything of that kind, and a proper examination is made by the authorities. It would be an excellent thing, indeed, if the people of Ohio could see the advantages of having such facilities here. We have arrangements with a chemist who does work at very moderate rates, and occasionally have examinations made by him. It is not always possible to tell whether a well is polluted with typhoid fever germs. There is some doubt as to discovering the germs by bacteriological examination.

Mr. Walton, of New Burlington: I simply want to say that I have been very much interested in Mr. Hartzell's paper, and am somewhat surprised at the power of the bacilli to penetrate the earth. We have been troubled on account of shallow wells in some parts of our township. In some localities where those shallow wells are we have dug through from four to six feet of loam and clay, striking a bed of gravel, which varies from twelve to thirty feet. At the bottom of the gravel a reasonable supply of water is found—sufficient all the time except during extremely dry seasons. In some localities during the dry season typhoid fever has appeared. We thought there might be a remedy for this by penetrating the earth deeper, and a couple of persons drilled two wells in one of these localities, going through the clay some thirty feet, and drilled the other one into a fine sand, from which came an abundant supply of water, so that all surface water was shut off, and we find that it has been of great benefit to the neighborhood; at least, there has not been much typhoid fever since that was done. We supposed, naturally, that it would shut off all this source of disease, and we hope it may. We had a family in the village using water from a surface well, a well supposed to be pure, good water, coming from pure, clean gravel, and yet the whole family became sick, six or seven of them taking typhoid fever. That family has been using water out of one of those deep wells since, and they have had no trouble or sickness. I feel that where this can be done it is a good thing.

Dr. Hoover: Before referring to the paper, I want to say a word or two that I think is proper at this particular time. I hope that no township officer who is interested enough in sanitary affairs to come here feels that we expect him to say nothing simply because he is not a doctor,

One of the most gratifying evidences that the doctors have been able to educate people up to the necessities of these things, is that a great many of the best sanitary officers that we have in this State are not professional men, but laymen—men who are, in their walks in life, of the same class as the man who has just read this paper, which was so excellent in every way. He is a man who has given a great many years to the study of sanitary matters, and you can see from the character of his paper that he has studied for a very wise purpose. It was an excellent paper and covers a great deal of ground. I only want to say that I am in hearty accord with the views promulgated by Mr. Hartzell in his paper; that we cannot help but believe that one of the most prolific sources, among numerous others in this country, of typhoid fever, is through the water supply. There is no doubt about it. It is an appalling thing when we think of it. We cannot get along without water. We are so constructed that water is an essential to the physiological functions of the body, and yet we are going right ahead with our eyes wide open and persistently and continuously polluting our very source of life. There is not a stream in the State of Ohio that is big enough for the outlet of a sewer that is not used for that purpose. I am firmly of the opinion, gentlemen, that municipalities, wherever it is possible, should have a public water supply, and that supply should be selected with special reference to its fitness. I believe that wells, in small towns and villages even, are a menace to health, and cannot be otherwise. Especially is it the case when we take into consideration the abominable methods that have been in vogue ever since communities began to form, for the disposal of night soil. I know in country towns the world over the common practice is to dig a square hole in the ground for a privy vault and set a small frame structure over it, and when the vault is filled within a short distance of the surface, the house is removed to another vault and the old one is filled up to the common level. They may escape for an indefinite length of time, but finally they will pay the penalty for their carelessness.

Dr. Probst has reminded me of an incident that I had forgotten. Some cases of typhoid fever occurred in a certain house. The sanitary inspector was sent to investigate the premises, and found that this family were using water from a well on the lot, the privy vault only being thirty some odd feet away. It was a very deep well, some thirty-five or forty feet in depth, and you know that a well will drain for quite a large area around it. He very carefully made measurements, reported the well and condemned it. He did not ascertain that there was another vault on the adjoining lot within ten feet of the well.

About ten years ago I traced nine cases of typhoid fever to a well on East Park Place. It had been one of the sources of water supply for the

old Central Ohio Lunatic Asylum on East Broad street. When that was burned down, the grounds were converted into building lots and this old well was left open, and was so located that it came on the line of the street, within the pavement line, and was left there and used by the public. I traced nine cases of typhoid fever one season directly to that well, and finally succeeded in having it abandoned and filled up.

Dr. W. S. Bookwalter, health officer of Miamisburg, not be present, the subject assigned to him, namely, "Do Hogs Fed Upon Offal From Slaughter Houses, Afford Wholesome Food For Man?" was not discussed.

Dr. Hoover, of Columbus: Mr. President, I am going to ask a favor of the convention. I do not like to do it, but I am so situated that it is impossible for me to be here this afternoon. I am on the program to discuss the subject of Expenses of Boards of Health. It will not take me over ten minutes to say all I want to say with reference to this matter, if I may be permitted to consume that much time at this time. [Cries of Go on!]

Mr. President, I feel very grateful, and haven't very much to say on this subject. I was assigned to this subject by the Secretary. He is the autocrat of the board of health, and whatever he says we have to do. [Laughter.] We know better than to refuse. In order to introduce this subject, I want to call your attention to the sections of the law which provide for the payment of expenses of boards of health, and I am going to do it as briefly as possible.

In the chapter of the Revised Statutes which directs how the levying of taxes shall be performed, the section starts off as follows:

"Section 2683. In addition to the taxes specified, in the last section, the council in each city and village *may* levy taxes, annually, for any improvement authorized by this title, and for the following purposes:"

Sec. 1. Does not concern us.

Sec. 2. For sanitary and street cleaning purposes, and for street improvements and repairs.

Now it is not necessary to take up your time in explaining how taxes are levied. This is one of the items for which the council may levy a tax under the direction of the proper persons.

In cities of the second grade of the first class, such part of the funds raised for any of these purposes, as the council deems necessary, shall, upon the recommendation of the board of improvements, be appropriated monthly for keeping in repair the paved streets of such city. Under the laws governing the State Board of Health, or sanitary organizations of the State of Ohio, the law that was passed two years ago, and amendments and revisions of all preceding laws, thereto, reads as follows:

"Section 2140. When expenses are incurred by the board of health, under the provisions of this chapter, it shall be the duty of the council, upon application and certificate from the board of health, to pass the necessary appropriation ordinances to pay the expenses so incurred and certified; and the council is hereby empowered to levy, subject to the restriction contained in the ninth division of this title, and set apart, the necessary sum to carry into effect the provisions of this chapter."

One of the unfortunate things in connection with this ninth chapter referred to, is that the sanitary and street cleaning affairs are united under one section. Thus when councils do see fit to set aside a certain sum of money for sanitary and street cleaning purposes, the street cleaning department gets the bulk of the appropriation, because that is for something that people can see, and the majority of people don't look out for the welfare of the community—its health. It does not say which shall receive the greatest amount of this money, and it does not say that the council cannot expend money beyond the appropriation. I am more inclined, since thinking this matter over, that this is a very fortunate thing for the local board of health. If the council neglects to make an appropriation of a specific amount for the expenses of the local board of health, then you are strictly in it, because you can spend all that is necessary and the council has to pay it. They will kick, and say they won't do it, but they will have to do it just the same. There have been several decisions in that matter at different times. They have no option in the matter. The law is plain, and it don't make a particle of difference what the intention of the author was. It says that when expenses are incurred by the board of health, * * * it shall be the duty of the council, upon application and certificate from the board of health, to pass the necessary appropriation ordinances to pay the expenses so incurred and certified. There is simply no condition there except the certificate of the local board of health. It does not say anything about whether it may be deemed necessary in their judgment, whether it is a requisite expenditure or whether it should be considered excessive or anything about it. It simply says they shall pay it, and they have no option in the matter. Councils as a rule do not consider sanitary matters. They have matters before them that are more interesting and they have tried to obstruct the health department in the cities and towns in every possible way, but several decisions have been rendered in favor of the boards of health. I will ask the gentlemen from East Liverpool what their experience was with the amendment. Of course, gentlemen, I do not mean to indicate that I am in favor of extravagance. I do not feel it is necessary and I do not think that the health officers as a rule can be accused of that thing, when we can get good officers for the munificent salary of $100.00 per year, and they are expected to attend to everything

in the way of sanitary matters. When the people were threatened with an epidemic like the one in Ashtabula, they didn't hesitate to spend any amount of money, while prior to that a little generous expenditure might have saved them many thousands of dollars and many valuable lives.

People should be educated up to the necessity of preventing trouble, of looking far enough ahead to anticipate what might naturally occur by the neglect of natural laws.

I want to say to you before I leave this point, however, that some councils have argued that you cannot expend money unless it has been previously appropriated. Well, unfortunately for the man who drew up that bill that provides for the duties of councils in levying taxes, he does not use the right word. He does not say they "shall," but he says they "may." It is not mandatory. It leaves it optional with councils. That is unfortunate for councils, but good for us.

The compensation of health officers throughout the State is wonderfully, exceedingly low. I have always felt, gentlemen, that it was entirely too low, but in thinking this over since I have had to talk upon the subject, I have concluded that perhaps we had better not say much about it. If a man is willing to make sacrifices, such as are demanded of the health officer in the discharge of his duties, for the sum of money that the board of health agrees to pay, while he may not receive a reward in this life, he is laying up treasures in heaven. Most of us, gentlemen, cannot have too much credit in that country. It may be that in the future a health officer in a city of good size will be quite a soft snap, paying a handsome salary and having large perquisites. One other point that is not entirely apropos to this, and yet is indirectly so, is that a member of a local board of health cannot be the health officer. This question is suggested by the Secretary because he has been so frequently asked about it. It is illegal, because he would be required to fix his own salary.

Just a word about the appropriation for the State Board of Health. Ever since this State Board of Health has been organized we have been forced to use strictest economy. We have appealed to members of the Legislature to increase the appropriation from the original sum of $5,000 annually to $10,000 During the cholera excitement, when we had to expend an unusual amount of money to guard the borders of our State against the invasion of cholera, we got as much as $10,000. Last year, although we had asked it and had given good reasons for asking it, because of the tremendous increase in the work of the Board, the increasing demands upon the time of the Secretary to travel in different parts of the State to investigate outbreaks of disease, the increase necessary in our office force to take care of the work there—correspondence, etc.,—so we could answer your demands when you called upon us, and confidently

supposed we were going to get an increased appropriation, when the time came we were cut off $2,000. Gentlemen, I want to say emphatically that it is an outrage that the State of Ohio has to put up with the paltry sum of only $8,000 to preserve the public health, the most important office in the State. I say again it is simply an outrage.

You can help us to get more. None of us gets a salary that compensates us for the time that is taken up, but we are eager and willing to give that time, provided we will not be handicapped by an appropriation which is entirely inadequate to meet the demands of the people.

Each of you can use some influence with your local representative. Those gentlemen, when they come to Columbus, think that whenever a man says anything about getting a bill through that he has an ax to grind. They don't know, in fact that, bills asked for in this direction are of a direct local interest to them, and to you, and you can use your influence in this direction to secure an increase, and you can enable the Board to be that much more effective in the future. Gentlemen, I am very much obliged to you for your patience.

Dr. Sutton, of Zanesville: I have been health officer in Zanesville for several years, and I want to say that our town council has never refused us anything that we have asked for. We get everything promptly. A few years ago, at the time of the cholera scare, we asked for $1,500 on short notice, with which to make special inspection. It was appropriated forthwith, and we have never served any notice that has not been complied with very promptly. We have never asked our county commissioners for anything that has not been granted. The same may be said of all boards in our county.

And thereupon the convention adjourned until 2 o'clock in the afternoon.

FIFTH SESSION.

FRIDAY, 2 P. M., *January* 25, 1895.

The Chair: Gentlemen, we will now take up the discussion of Dr. Hoover's subject on expenses of boards of health. Are there any remarks?

Mr. Walton, of New Burlington: This question has been ably discussed, as far as it has gone, but it has not reached the condition of a good many here to-day. I trust and hope that there are a good many township trustees here to-day, and consequently members of township boards of health, and we have no doubt searched the law to find whether

we were authorized to create a sanitary fund in our respective townships. So far we have been unable to find anything warranting us in making a special levy for this special work that has been recently laid upon us, and I have thought whether or not there should be a law passed by the Legislature making this matter plainer, so that we could make a special levy for this particular work. There is perhaps no work in which we are engaged in the township that is of any more importance than the health and prosperity of our people. In our township (we are in a rural district) we have but about a million and a half, perhaps a little less than that, to levy on, and the law says that we shall not exceed certain bounds. We are only permitted to levy $400 a year to care for our poor, and perhaps a sum like this for a general township fund, and so on. And that is the largest fund that we can levy according to law. We found some difficulty in having sufficient means to carry out all the different branches of the work, having to draw largely for extras upon the general fund. We have concluded that our Legislature has not laid upon us a duty without the expectation that we would be backed up with means, somehow or other, to meet the expenses, so we have concluded to levy a sanitary fund, and if it is in violation of law, somebody will find it out and stir us up on it. If the people refuse it we will appeal to the Legislature.

I want to ask this question, and I trust this meeting will indulge me if I ask it now: We were a little at a loss to know just how, in our rural district, we were to find what was really a reasonable compensation for the health officer. Last year we employed a health officer and conferred with him in reference to what was a reasonable compensation for his services, and he thought perhaps $75 for our township would be very reasonable, and we could not see that there was $75 worth of work—only about a dozen, or maybe fifteen, reports to make during the year to the State Board, and we reduced the compensation to $50. At the close of the year we could not find where he had really done $50 worth of work, and are at a loss to know what the law would say was a reasonable compensation for a health officer in a district like ours. I suppose in large cities he is paid $600 or $700 or $1,000 a year. In rural districts, you know, there is but little to do.

Dr. Hopkins, of Ashtabula: Mr. Chairman, I think that sometimes we get paid for what we do and more times in the sanitary work we get nothing. Our boards of health get nothing but "cussings," and our health officers get their pay largely in that kind of stuff. As Dr. Hoover has said, the compensation of many of us has been but meager. I have done in my own city for $50 work that I would not have done in some places for $1,000. I told our board at home, I will work for you for $50, although it is just a drop in the bucket; it is not pay, but I will work for you for

that price. Finally they raised it to $100. I went through last month what I would not go through again for $500. Nobody could hire me to do it. Anybody doing this kind of work has to do it for small pay. He does it simply because he loves to see something done—because he loves to see our children and our homes prosper and enjoy good health. We have had no trouble in raising our funds. Our board asked our council to pay their bills, and there has been no "kicking" about them. During the epidemic we asked for $10,000, and told them that probably we would need more than that. And there were no "ifs" and "ands" about it. They did not hesitate one second; we got our money. For the last six years I have acted as their health officer, and it certainly has been work of education. The people are educated up to the point where they see there is some good in it. That has got to be done all over the State. One of the grandest things we can make mention of in our State is that we have got such boards of health as our brother talks about. I am glad he has got good sense and backbone to make the levy for money.

I have been very much interested in this discussion. We must have funds to work with. We have been handicapped a great deal in the work by lack of funds. I do hope, gentlemen, that every one of our health officers and members who are present here to-day will do their utmost with the legislators who come from their districts to work for adequate appropriation for our State Board. We have got what I consider to be a very efficient State Board of Health, and with the money they have had at their command they have been doing noble work, and we should back them in all ways possible. I want to emphasize what Dr. Hoover said in his able speech—every word of it. We want to have good men appointed on our boards of health, and if we work things right we will have such men appointed.

Mr. Spear, of Mt. Gilead: I simply want to say a few words in this connection. We certainly have had a very interesting discussion. We have had some trouble at times with our town council. We had an epidemic of scarlet fever at one time. Few families were quarantined, and all the necessary expenses connected with the quarantining of those families were submitted to the council, but they would not allow the bill. The bill included expenses for disinfectants, for persons running errands, for quarantining, and all that sort of thing. There is another epidemic there this year. As I am a member of the board of health I would like to have some light on the subject. Five or six families have been quarantined in cases of scarlet fever, and of course bills were sent in for cleaning up, for disinfectants, and everything, in fact, connected with it. Now, who should pay them? The board of health or the council?

Dr. Hopkins, of Ashtabula: I think it is an important suggestion concerning the members of the board. In our place the mayor has suggested the names of men for these nominations. I know that our boards of health were chosen by the council, but there are ways of getting around that, and we can get good men to fill their places if we work for them. I will say as to the payments of bills, in cases of poor families being quarantined and the husband, of course, not being able to work. As I told you we have no trouble about that. Those bills are paid. If it is necessary to shut them up, we tell them that you will not starve, will have enough to eat and drink, and we will see that proper care of you is had, and if they are not able to buy disinfectants, we buy them ourselves. We audit those bills and submit them to the council for payment. However, if the man is able to stand the quarantine, and has got sufficient money to carry himself along, we say to him that he must bear the expenses. We tell him, you are not town poor, and have got funds and we will expect you to bear your own expenses. We have had no trouble whatever. But a man living on his day labor from day to day we say to him, don't you worry, your family will not suffer for anything that is needful. You won't get any delicacies, but you will get good wholesome food, and all fuel and everything that is necessary. As I say, the council never object to these bills.

The Chair: I suggest if you want to be safe you had better have your members elected by the council. In some larger cities they are acting under special laws, but in the smaller towns and villages, there is a method prescribed for the election of boards of health, they being elected by the council, and appointment by the mayor has no force whatever, and sometimes your boards are not legally constituted.

Dr. Hopkins, of Ashtabula: Our council chooses our members of the board of health. They are elected by the council, but it is customary for the mayor to suggest the names for nomination.

The Chair: Well, I thought you said the mayor appointed them.

Mr. Walton, of New Burlington: I think the councils should pay all bills which are reasonable. There is such a thing, though, as a board of health presenting an unreasonable bill, in which case the council is justified in not approving the same. I want to say in reference to the management of such cases, in our county we are in the habit of paying for our county poor who are not able to foot the bills. We certify them up to the infirmary directors, and draw part of the money back that we expend in caring for them, and consequently it does not come so heavy on the township. I suppose the same thing might be done in a village corporation. At any rate we take charge of those that are supposed to be taken to the infirmary, and instead of taking them to the infirmary we

say to them, that we will foot the bills, and then you give us as much as it will cost to keep them there and we will see that they are properly taken care of. We get along first rate with the infirmary directors, and they commend us for the course we pursue in taking care of the poor.

A Member: I think that all bills submitted to the council after being certified to by the board of health, should be paid. I think if the council can reject a part of a bill, they can all of it. I don't believe they have the right to reject any part of the bill, but must pay it all. If six men on the board of health decide it must be paid, I don't think they have any discretion in the matter.

Mr. Truex, of New Straitsville: The mayor in our town does not appoint the board of health, but he comes to me and asks me who I want on the board. Not long ago he asked me to name some men, and I gave him a few names and he says, I will appoint them. We have no trouble in getting good men. Now when it comes to the bills—we had to quarantine a house and appoint a sanitary policeman. The mayor told us that he did not believe in appointing a sanitary policeman. We called the board together and appointed the policeman, but have not yet sent in our bill, but we anticipate no trouble in having our bills allowed.

Mr. Purinton, of East Liverpool: The law recognizes two distinct ways in the selection of officers. One is to be appointed by the mayor and affirmed by council; and the other appointed by the council. Now then let those who have not looked into this matter, carefully look up the subject and see if their various boards are legally constituted, because there is a distinction.

The Chair: The next subject for discussion is "The Best Method to Prevent the Spread of Contagious Diseases in Towns and Cities," the discussion to be opened by Dr. P. H. Aldrich, health officer, Defiance.

Dr. Aldrich: Gentlemen, this subject of mine has been pretty well gone over since our meeting has been in session, but there are some little matters yet to be considered in the way of the prevention of contagious diseases, and the spread of contagious diseases throughout the various cities and towns. Now without the assistance of our bacteriologists, and finding out what the real cause of these diseases are, we would be of little account. In the first place, it is absolutely necessary for us to know what we are fighting, what we have to combat, before we commence our work of stopping the spread and ravages of diseases. Now, gentlemen, under this subject I will take diphtheria and scarlet fever. They come the nearest together of any two that are contagious. In the first place, as the health officer receives notice from the physician that he has a case of diphtheria in a certain section of the town, he immediately sends his sanitary policeman with a card, naming the disease, to nail up in some

conspicuous place on the front of the house, or the door, or where every person will be likely to observe it. That card should be of such a nature and printed in such style that it attracts the attention of every passer by. When a person comes within sight of the dwelling where the cards are tacked up, the first thing that catches his eye is the card, if it is rightly gotten up. The letters on the card should be at least an inch in size, and he will see that he is strictly forbidden by the board of health of that city to enter that house. Now here I have such a card as we have in our city (exhibiting card). It appears that this card is a little different from the most of cards. I never saw one just like it. The card, as you have observed, is a "diphtheria" card. Now, in addition to the word "diphtheria," it reads below: "All persons not occupants of this house are notified to avoid entering it until this card is removed. By order of the Board of Health." Now any person can see that card for quite a distance and they know at once that it warns people to keep away, warns them to keep a certain distance from the house. When I get a notice that we have a case of diphtheria in our town, I immediately go there myself with a sanitary policeman. I tell every occupant of that house what they must do and what they must not do. I do not consider it absolutely necessary to quarantine every case of diphtheria or scarlet fever, or those diseases that we come in contact with almost every day. I have no difficulty in stopping the ravages of diphtheria in our city in a short time. I have had two cases I think within the last year and that is all, and they were stopped, checked right in the house in which it originated or broke out. Nobody left the house and consequently the disease was not spread.

When we have diphtheria it is eight chances out of ten that you find that it comes from decayed bodies. Vegetable matter is the most productive of the diphtheria. When the sanitary policeman goes on his rounds to clean up cellars and lots, and every filthy place in the city that can be found, he frequently finds cellars with five or six bushels of potatoes, which, perhaps, have decayed, and lots filled up with decayed potatoes, turnips, cabbage, etc., and it makes lively work for the garbage-gatherer and the sanitary policeman; and if they are good, level-headed men, they will work until they get this all nicely cleared up. Then when we come to stop this ravage of the disease it has got a little start. As I told you in the first place, gentlemen, we will put this card on the house and positively forbid any one from entering or coming out. Give the inmates of the dwelling instructions that if any of them are seen on the street they will be promptly arrested and locked up until twenty-one days have passed for the incubation of that disease. If you do catch them out, do just as you say. A health officer has got to have a great deal of "sand"

and he wants to be pretty sharp, and when you start in for a thing never give it up. You may not have a friend in the city to back you in the start, but if you do good, they will be your friends in the end. You have got to do things regardless of friend or foe. Don't back down for any one, not even the mayor of the city. If you do any good in a city as a health officer you have got to pursue a course and go straight ahead and do your duty in the face of everything. In the first place, ascertain if you are right, and then go ahead, not be as I was a year ago when I came into this meeting, and I got the worst roasting of any man that ever came to this house, Brother Probst can tell you so. I got it for quarantining three individuals who had been exposed to small-pox. They threatened to lock me up Fortunately, one of them committed suicide before I got back. I went to our city solicitor to look up the law to see what right I had to do that. He told me to let it alone—that there was no law whereby I could quarantine those men. I found out afterward there was.

Well, now, perhaps I have said all that is necessary on this subject. It is getting late. I want to leave this now for discussion. I want to hear what you have all got to say, for I want to learn something. Now, gentlemen, with these few remarks I will leave the matter to yourselves, hoping that I will hear from almost every health officer in this house.

Prof. Nelson, of Delaware: I don't know of anything that is of more interest to us than this subject. What shall we do when an epidemic comes to prevent the spread? Those of us who were here last night will remember that Dr. Miller, of Cleveland, claimed that the epidemic of diphtheria at Ashtabula, which lasted less than a month, cost that city, I believe, $500,000. I have just been talking to my friend, the health officer of the city, and asked him if he would verify those figures. His answer was that it would be impossible to tell exactly what was the loss to the city as a result of that epidemic. It came just at Christmas time during the Christmas trade, but he finally said that he had no doubt that it cost the city $100,000 at least. There were one hundred cases of sickness, and if that epidemic cost $100,000, it is perfectly clear, if I remember anything about mathematics, that each one of those cases of diphtheria cost the city $1,000.

Now, it is very evident to me that there is only one thing to be brought clearly before our minds this afternoon, and that is, that it is our duty as health officers, leaving out every other consideration, to avoid that enormous weight upon us.

Now, there is no question as to the right of the board of health to contract debts. We found that out this afternoon, and there is nothing for the council to do but to stand behind us and see that the bills are paid. There are certain things we can do and must do in order to pre-

vent epidemics of any sort coming to a community. The first thing is to placard the house, as the gentleman said this afternoon. Make people understand that. Last year it was brought to my attention that an officer in one of our towns—a local officer—had announced that if the house was placarded he would tear it off. If he came the second time he would have the officer arrested. I would like to have been health officer there a little while and see whether that man was going to come out ahead or not. I think that placard would have gone up the second time, and if it was disturbed, somebody certainly would have been arrested.

In the second place quarantining must be done. To a man who has been earning his bread by daily labor, we say, if you will put this sick child in a room and have the mother take care of it and stay away from other members of the family, that will answer. But we are simply playing with that case. It is our duty to see that the house is thoroughly quarantined and kept so until everything is over. Some people are not willing to admit that diphtheria is contagious, especially in cases of their own, so they insist on a public funeral. There should be no public funerals in such cases, or in case of any contagious disease; we should not even allow the body to be taken to a church. Say to the friends we are sorry, but this is a contagious disease, and a public funeral is forbidden, for the living have some rights as well as the dead, and we must not have a public funeral under any circumstances. I mean they must refuse to allow any person to come near the funeral except those absolutely necessary for carrying the body to its place of burial.

I wish we were on higher ground this afternoon than we are, and yet friends it does seem to me that we ought to be encouraged. I have been looking back this afternoon eight years. Some wanted us to organize a sanitary association and we met in this city. We had only about a half dozen. We expected that the people of Ohio would rally to the cause and thought we would have a house full, but were badly disappointed. That was eight years ago. And now, gentlemen, are you aware of the fact that there are to-day over 10,000 people in the State of Ohio who are officially connected with boards of health? [Applause.] We have between 1,700 and 1,800 boards of health, when ten years ago there were only a few, and most of them were inefficient. I am glad to see that so many have turned out at this meeting and have taken such a prominent part in the discussion. I believe, gentlemen, that within a few years we can educate the people of the State to such a degree that we will be able to stop epidemics of contagious diseases.

Dr. Hopkins, of Ashtabula: Mr. Chairman, I feel as though there is many a one here who would like to say something and ought to say

something upon this subject. I am as full of the idea of contagious diseases as any man can well be. The matter of quarantine I think is one of the best things that we can do, to thoroughly quarantine houses containing contagious diseases. You will find that it is very hard to do that, but it must be done. Placard the house and tell the guard to allow no one to go in or out.

Another thing, after the disease has been disposed of, we should see to it that the house is thoroughly disinfected.

Mr. Spear, of Mt. Gilead: We have had some experience with scarlet fever, and the work of the health board was very efficient indeed. As soon as a case was reported it would immediately be quarantined. We found it necessary once to arrest and jail one man for violating the rules, for failing to report a case. After being in contact with a case he ran about the town and spread the disease in that way.

Dr. Aldrich, of Defiance: Mr. Chairman, now in regard to this quarantining, I might have been misunderstood. I said that I did not think it was necessary to quarantine in all cases. I have had some experience as a health officer, about two years in a city of 12,000 inhabitants, and I have seen a good deal of scarlet fever. It broke out a number of times during my term, but I never had to quarantine a single case yet. I never quarantined but two houses in two years in our city, and that was for diphtheria, and in one of them the servant girl stole out the back door after milk, and after she got her milk she found she could get out, and afterwards went out. I found out the next morning that she had been out, and what could I do then. She had been out, but I could prevent her going out the second time. If it is necessary to quarantine a building, it is necessary to do it thoroughly. At night time the people will in on you and carry it away. You should have guards on duty both day and night. In that way you can keep the disease confined to the house and under control. I have never found any trouble in keeping it under control without quarantine.

Chairman: Dr. Probst, Secretary of the State Board of Health, will now present the subject, "The Abatement of Nuisances."

THE ABATEMENT OF NUISANCES.

By C. O. Probst, M. D., Secretary of State Board of Health.

There is no duty a board of health is oftener called upon to perform than that of abating nuisances; and one of the greatest difficulties encountered by such a board is the proper performance of this duty. I venture to say that there is not a city or village in this State in which nuisances may not be found, and this, in most cases, is not the fault of the board of health, but is due to uneducated public opinion. We should first clearly understand what constitutes a nuisance, and we may then consider how nuisances may be abated.

It may be said, generally, that anything which is detrimental to health or comfort, or which threatens danger to life or property, is a nuisance. As has been well said, "Every person is absolutely bound so to conduct himself, and so to exercise what are regarded as his natural or personal rights as not to interfere unnecessarily or unreasonably with other persons in the exercise of rights common to all citizens. Every breath of this obligation constitutes a nuisance."

The Legislature of Ohio has declared certain acts and conditions to be a nuisance. It has also authorized the board of health to make orders and regulations for the abatement and suppression of nuisances. The board has also been given *quasi* judicial functions, and may determine the fact whether a nuisance has been committed. When, *in the opinion of the board of health*, any building, premises, matter or thing is in a condition dangerous to life or health, the board may declare the same a public nuisance and order it abated.

A distinction must always be made between public or common nuisances and those that are private, or limited in their effect. Boards of health should deal only with public nuisances.

A public or common nuisance is one which affects or may affect the community at large, or a considerable portion of it. A pig-pen, for instance, located sufficiently near to a public highway—either a road or alley—so that passers by will be annoyed by the noxious oders arising from the pen, is a public or common nuisance. It may be a source of constant and a special injury to those living in its immediate neighborhood and be for them a private nuisance; but all persons have a common right in the public highways and are, or may be, to a greater or less extent, injured by the conditions presupposed. On the other hand, suppose that a man plants a thick growth of trees or a hedge in such a position that his neighbor's dwelling is shaded, rendering it dark, damp and therefore unhealthy. This would be a private nuisance, in no way affecting the general public, and should be abated by the person injured, who may also claim damages from the person committing the nuisance. Certain acts or things may be regarded as *prima facie* nuisances; that is, it is only necessary to prove the fact that they were committed and not that the act or thing is in fact a nuisance. What the Legislature declares to be a nuisance, is a nuisance, and of this character. So also a board of health, acting under powers granted by the Legislature in general terms may declare certain things to be nuisances. In such case it is only necessary to show that the order or regulation is a reasonable exercise of such powers, and that the thing removed or destroyed was of the character specified in the rule or regulation. The local law in this instance will have all the force of a statute.

As examples of nuisances which may, *prima facie*, be regarded as such, may be mentioned:

(*a.*) Exposing one's self in a public place when afflicted with a dangerous contagious disease.

(*b.*) Selling or offering for sale diseased or corrupted meats, or unwholesome articles of food.

(*c.*) Keeping dangerous explosives or combustibles in or near a public place.

(*d.*) Exposing or depositing filthy or offensive matters in public places or on private premises.

(*e.*) Corrupting or rendering impure a well, spring, or other source of water supply.

Other acts or things may become a nuisance according to circumstances or the locality in which they exist or are committed. Take, for example, the business of slaughtering. This may or may not be a nuisance, depending upon the locality in which it is conducted. If an incorporated village includes within its territory a locality where the business of slaughtering may be conducted without creating a public nuisance, as already defined, boards of health are not authorized to interfere, as it could not be shown that a public nuisance exists. A slaughter house so situated may become a public nuisance by growth of the community in its direction. This frequently happens. The

owner cannot set up the claim that his slaughter house was located there first, or that it had existed for any period of time, even a hundred years or more, without creating a nuisance. Whenever it interferes with the superior rights of the public it becomes a public nuisance and may be abated.

Certain of these noxious trades which were once considered *prima facie*, or necessarily nuisances, have been removed from this class by means of modern appliances by which the offensive odors or gases usually produced may be destroyed. In such cases the results of these appliances will determine the fact of a nuisance being committed. No matter how much care is taken, the fact that injurious results proceed from the business condemns it.

An important question in abating a nuisance is to fix the responsibility for its creation or maintenance. For instance: A owns a dwelling house which he rents to B. B fails to clean the privy vault upon the premises, which becomes a nuisance. Who shall be held responsible—A or B?

As a general rule, it is not the owner of the premises, but the occupier, who is responsible for nuisances thereon; so in this case B should be dealt with primarily for creating a nuisance. He may be fined for failure to abate the nuisance, but this will not necessarily remove it, and it may still remain a menace to the public health. But A (the owner) is also responsible for maintaining a nuisance on his property, and may be required to abate it. If he fails to do so after proper notice, the board may cause it to be abated, and the expense incurred becomes a lien on the property. This cannot legally be done without due notice to the owner, nor without, except under extraordinary circumstances, giving him an opportunity to abate the nuisance himself. The board becomes, in fact, a court before which the owner must be cited to appear. He must be given opportunity to show cause, if any, why the board should not proceed to abate the nuisance. And the law further provides that if he promises to abate the nuisance himself within a reasonable time the board shall grant such time.

Municipalities may be held responsible for certain nuisances and be required to abate them. It may be laid down as a general rule that a municipality is liable for nuisances committed or maintained upon property owned and managed for private corporate purposes. In this respect municipal corporations have the same responsibilities as private individuals. Thus corporations are responsible for befouling streams, for suffering the privy vaults of school houses or other public buildings to be in a condition to menace the health of the people in the neighborhood or of those who resort to them; for the maintenance and proper care of sewers which have been established; for permitting sewage to be discharged where it will cause a public nuisance, etc.

In all cases their responsibility is for the mismanagement or wrongful use of property belonging to or controlled by the corporation.

For the abatement of nuisances it is advisable for boards of health to adopt rules and regulations, or standing orders, they may be called, prohibiting those nuisances most commonly met with. These should include only those nuisances which have been declared to be such by Legislature or those that are recognized as such at common law. Special nuisances which may be met with may be dealt by special orders. Care should be taken to preserve a complete record of nuisances of a special order, as it may be necessary to present this as evidence in court. Special orders are in fact laws, and the board must be able to show good reason for their enforcement.

When complaint is made, or it is discovered that a nuisance exists, the health officer, sanitary policeman or a member of the board of health should make an investigation, and if a nuisance is found, an order should be served upon the person responsible for the nuisance to abate it within a definite and reasonable time. If it is not abated within the time indicated, the person may be prosecuted for violating the statute, rule or regulation governing the case, or the board may abate the nuisance after giving the owner of the property an opportunity to be heard and to abate the nuisance himself.

When the emergency is great, the board of health may summarily abate a nuisance without notice to the owner of the property on which it is found or to the person creating the nuisance; but if property is destroyed the owner will be entitled to his "day in court," and the board will have to show that a nuisance threatening life or health existed and that there was good reason for its summary abatement.

Cases may arise where it is necessary for the board of health to take action with reference to nuisances which are only threatened but are not yet created. For instance, in one of our villages a company established the business of poultry slaughtering in a public place. This was done in cold weather, which prevented the development of bad odors to any considerable extent. There was every reason to believe that a public nuisance would be created when warm weather should come, but it was held by the Attorney General that the board of health must wait until a nuisance had actually been created before action could be taken for its abatement. In this case, if the board had been able to show conclusively that from the nature and location of the proposed business a nuisance must inevitably follow, an injunction would probably have been granted by a court of equity. It is only under extraordinary circumstances that courts of equity interfere in such matters, and the necessity for so doing must be clearly apparent. There is great need that boards of health should have a legal adviser, as questions of law are continually arising which can be settled only by members of the legal profession.

When possible, a lawyer should be secured as a member of the local board of health. It might be of advantage if the prosecuting attorney of each county were made the legal adviser of each board of health in the county, a fee being allowed him for his services.

A Member: I want to ask a question in regard to the killing of fish in the Sandusky river at Bucyrus.

Mr. Beardsley, of Findlay: We had a similar case at our place. The fish died by the hundreds. The cause was traced down, and it was found to come from the brewery. We have an artificial ice plant in the town, and the ammonia which is used in that plant in the manufacture of ice got into the stream and killed hundreds of fish. I think such nuisances should be stopped.

And thereupon the meeting adjourned *sine die*.

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